E/ECA/TCD/17/Add.1

UNITED NATIONS TRANSPORT AND COMMUNICATIONS DECADE IN AFRICA, 1978 – 1988

LG/NAIROBI.

VOLUME IV

APPROVED PROGRAMME OF ACTION FOR PHASE II

1984-1988

COMMUNICATIONS PROGRAMME

PROJECT PROFILES

PART I TELECOMMUNICATIONS

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Volume IV

TELECOMMUNICATIONS

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Project No. TEP-01-001

ALGERIA: INMARSAT COAST STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Procurement and installation of equipment for an INMARSAT coast station

Location: Algiers

Cost: $4.50 million

External financing required: $4.50 million

Duration: Three years

Desirable starting date: 1987

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The project will improve maritime telecommunications for vessels who wish to communicate with Algeria.

2. Nature and constituent parts

- Detailed technical study of the entire project;
- Procurement and installation of equipment for an INMARSAT coast station at Algiers;
- Commissioning of the installations;
- Training of personnel for operations and maintenance of installed equipment.

III. Justification; economic and financial analysis

1. Context and benefits

The establishment of a telecommunication network by satellite using INMARSAT system for ship-to-ship and ship-to-shore has revolutionized maritime communications.

Ship-owners equip their vessels with INMARSAT ship terminals. It is therefore up to the administrations operating the facilities for communications between ships and shore to install the earth station terminals to keep in contact with the vessels which use INMARSAT network.

The project comprises the equipment for one INMARSAT coast station in order to satisfy the growing demand for connections in this new network.

2. Cost

The cost of the project is $4.50 million.

Project No. TEP-01-002

ALGERIA: FREQUENCY MONITORING STATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Procurement and installation of equipment

Location: Algiers, Bechar and Ouargla (fixed stations)

Cost: $10.00 million

External financing required: $10.00 million

Duration : Three years

Desirable starting date: 1986

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The project provides for the establishment of appropriate installations for monitoring and measuring radio signals radiated by various types of equipment installed in all places of the country.

2. Nature and constituent parts

- Detailed technical study of the whole project;
- Procurement and installation of radio frequency monitoring and measuring equipment for three fixed and three mobile stations;
- Commissioning of the installations;
- Training of personnel for operations and maintenance of the installed equipment.

III. Justification, economic analysis

1. Context and benefits

Within the framework of two four-year plans (1970-1973 and 1974-1977) and the five-year plan (1980-1984) Algeria has extended its telecommunication network at a very fast pace.

This extension is shown by having implemented a considerable number of radio relays operating in the VHF, UHF and SHF bands as well as radio circuits using HF bands. These links are operated with frequencies which are particularly affected by harmful interference. It is therefore proposed to establish three fixed and three mobile monitoring and frequency measuring stations in order to safeguard the orderly use of the radio frequency spectrum,

From a general point of view, the radio frequency spectrum is a precious and limited resource, demanding strict management and planning in order to avoid signal interference. The project will facilitate efficient frequency management to the advantage of its users and the international community.

2. Cost

The cost of the project is $10.00 million.

Project No. TEP-05-001

BURUNDI: IMPROVE UHF RADIO LINK TO ZAIRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Specify, purchase and install UHF radio link

Location: Bujumbura (Burundi) to Zaire

Cost: $0.10 million

External financing required: $0.10 million

Duration: Three months

Desirable starting date: 1984

Project initiator: National Telecommunications Office (ONATEL)

Project management authority: National Telecommunications Office (ONATEL)

II. Description

1. Aim and objective

The project is to increase the capacity and improve the quality of the existing link to Zaire. The project is part of the extension of the PANAFTEL network.

2. Nature and constituent parts

Specify, purchase and install UHF radio and multiplex equipment.

III. Justification; economic analysis

1. Context and benefits

The provision of improved quality of communicationswill strengthen the existing economic and cultural relations between Zaire and Burundi.

2. Cost

The cost of the project is $0.10 million

Project No. TEP-05-002

BURUNDI: EXTENSION OF EXCHANGES BY 1,000 LINES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase and installation of additional lines at existing exchanges

Location: Burundi

Cost: $0.70 million

External financing required: $0.70 million

Duration: Four years

Desirable starting date: 1984

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

To expand the capacity of the network exchanges to satisfy the increasing subscriber demands. It is estimated that 1,000 lines will have to be added to the existing exchanges during Phase II of the Decade.

2. Nature and constituent parts

Purchase and install additional telephone line equipment for the existing exchanges. The additional equipment is normally supplied by the companies who manufacture the existing equipment.

III. Justification; economic analysis

1. Context and benefits

Well-designed telephone exchanges begin with small capacity and grow to a certain maximum according to requirements of subscribers. The project is to extend the capacities of the various exchanges to allow connection of additional subscribers.

2. Cost

The cost of the project is $0.70 million.

Project No. TEP-05-003

BURUNDI: EXTENSION OF NATIONAL NETWORK BY 200 CIRCUITS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature Study, specify, purchase and install transmission equipment

Location: Between towns that require additional circuits

Cost: $5.00 million

External financing required: $4.00 million

Duration: Four years

Desirable starting date: 1984

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

The long-term objective is to provide telecommunication facilities to all population centres in the country. This project pays special attention to improvement of existing services and extension of service to rural areas.

2. Nature and constituent parts

The work includes extension of transmission networks to places where no telecommunications services are available, and extension of capacities, according to traffic demand, in places where services already exist. Construction of buildings, civil works, acquisition and installation of radio and multiplex equipment.

III. Justification; economic analysis

1. Context and benefits

The penetration of the services into the interior and improvement and extension of the existing facilities contribute to national development by promoting regional integration and improving the quality of the nation's telecommunication infrastructure.

2. Cost

The cost of the project is $5.00 million.

Project No. TEP-05-004

BURUNDI: EXTENSION OF THE SATELLITE EARTH STATION CAPABILITY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Specify purchase and install additional equipment at the earth station

Location: Bujumbura

Cost: $0.12 million

External financing required: $0.12 million

Duration: Four years

Desirable starting date: 1983

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

To meet the increasing demand for international telephone, telegraph, and telex communications for the existing satellite earth station capacity at Bujumbura extended by 30 circuits.

2. Nature and constituent parts

Purchase of additional equipment from the manufacturer to increase the capacity of the station by 30 circuits.

III. Justification; economic analysis

1. Context and benefits

The increased capacity will substantially increase the number of direct international links operated by ONATEL and greatly improve service provision to the subscriber base. The new circuits are expected to generate significant additional revenue for ONATEL.

2. Cost

The cost of the project is $0.12 million.

Project No. TEP-05-005

BURUNDI: EXTENSION OF RURAL NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Establishment of 100 rural telephone stations

Location: Burundi

Cost: $0.60 million

External financing required: $0.60 million

Duration: Four years

Desirable starting date: 1984

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

To provide direct telephone access to the national network for 100 remote locations.

The implementation of this project contributes to the long-term national objective of providing communications to the rural communities.

2. Nature and constituent parts

Construction of a telephone line or radio link between a rural community and the nearest telephone exchange. The rural telephon station is then linked to the exchange as a prolonged subscriber line.

III. Justification; economic analysis

1. Context and benefits

Nearly 97 per cent of the population lives in rural areas, yet more than 70 per cent of the telephone subscribers are located in the capital. The penetration of the services into the interior enhances the prospects for economic development and promotes the balanced growth of the country.

2. Cost

The cost of the project is $0.60 million.

IV. Status

No information available.

Project No. TEP-05-006

BURUNDI: EXTENSION OF LOCAL CABLE NETWORKS BY 8,000 PAIRS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase in urban areas and install cables

Location: Burundi

Cost: $1.00 million

External financing required: $1.00 million

Duration: Two years

Desirable starting date: 1986

Project initiator:

Project management authority:

II. Description

1. Aim and objective

To improve the quality of cable plant in urban areas and to extend the reach of these networks where possible.

2. Nature and constituent parts

Specify, purchase and lay primary cables in the urban areas.

III. Justification; economic analysis

1. Context and benefits

Strengthens the basic telecommunications infrastructure in the most heavily used areas. This will also allow more efficient use of existing exchange capacity.

2. Cost

The cost of the project is $1.00 million.

Project No. TEP-05-007

BURUNDI: INSTALLATION OF TWELVE NEW TELEPHONE EXCHANGES IN THE INTERIOR OF THE COUNTRY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Specification, purchase and installation of 12 telephone exchanges in the interior of the country

Location: Burundi

Cost: $1.00 million

External financing required: $1.00 million

Duration of project: Four years

Desirable starting date: 1984

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

To begin to provide telecommunications services to all towns and population centres of the country.

2. Nature and constituent parts

Complete study of providing telecommunications services to 12 towns or population centres in the interior of the country. Construction of station buildings, acquisition and installation of telephone exchanges of varying sizes according to requirements.

III. Justification; economic analysis

1. Context and benefits

About 97 per cent of the population lives in rural areas, including very small towns. The economic backbone of the country is agriculture. The connection of the population centres to the telecommunications network enhances the socio-economic development potential of the country.

2. Cost

The cost of the project is $1.00 million.

Project No. TEP-05-008

BURUNDI: INSTALLATION OF A NEW 8,000-LINE EXCHANGE AT BUJUMBURA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Specify, purchase and install 8,000-line automatic telephone exchange at Bujumbura

Location: Bujumbura

Cost: $6.50 million

External financing required: $6.50 million

Duration:of project: Two years

Desirable starting date: 1984

Project initiator: ONATEL

Project management authority: ONATEL

II. Description

1. Aim and objective

The present Bujumbura telephone exchange is a 5,000-line. Philips rotary system without register control. Its capacity will be exhausted by 1986. The objective of this project is to install a modern automatic exchange with initial capacity of 8,000 lines.

2. Nature and constituent parts

The work includes traffic study, equipment specification tendering, analysis of offers, acquisition and installation. Appropriate exchange buildings will have to be constructed.

III. Justification; economic analysis

1. Context and benefits

The capacity of the existing exchange will be fully utilized by 1986. It has either to be changed or extended (if possible). The field of switching is going through a period of fast changes. Sticking to the old system will, in the long run, be very expensive. Spare parts may be unavailable or very expensive. For these reasons a complete change is required. Service and maintenance costs on this type of equipment are relatively high.

2. Cost

The cost of the project is $6.50 million.

Project No. TEP-06-001

CAMEROON: EXTENSION OF THE CAPACITY OF NINE TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Extension of buildings, acquisition and installation of additional telephone exchanges

Location: Cameroon

Cost: $7.83 million

External financing required: $7.83 million

Duration: Four years

Desirable starting date: 1980

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The installed capacities of some exchanges are being exhausted. The objective of this project is to extend the capacities of these exchanges before service begins to deteriorate due to congestion.

2. Nature and constituent parts

Extension of buildings, specification, purchase and installation of additional telephone exchange equipment to meet the growing subscriber demand.

III. Justification; economic analysis

1. Context and benefits

The majority of the country's 34 automatic telephone exchanges will have their capacities exhausted by the mid-1980s. This project has been designed to alleviate any congestion problems before they arise and ensure continued satisfactory operation of the system.

2. Cost

The cost of the project is $7.83 million. Financing has been secured th through supplier credits and the CCCE.

Project No. TEP-06-002

CAMEROON: EXTENSION OF URBAN AREA NETWORK IN SIX TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of lpriority: National project

Nature: Purchase of underground and overhead telephone cables and installation in six towns.

Location: Cameroon

Cost: $5.00 million

External financing required: $5.00 million

Duration of project: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The objective to extend and improve the urban cable distribution network in order to give reliable service to existing subscribers and to be able to connect new subscribers.

2. Nature and constituent parts

The work includes trench digging, duct construction, purchase and installation of cables, and cable terminals.

III. Justification; economic analysis

1. Context and benefits

Existing plant is inadequate to meet present demands and future growth; new cabling will allow the Posts and Telecommunications Office to maintain good quality service and expand the system in an orderly fashion according to need.

2. Co[illegible]

The project cost is $5.00 million. Full financing has been secured through supplier credits and the CCCE.

Project No. TEP-06-003

CAMEROON: CONSTRUCTION OF TELEPHONE EXCHANGES IN TWO TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Study, construction of exchange buildings, specification, purchase and installation of automatic telephone exchanges

Location: Cameroon

Cost: $5.10 million

External financing required: None

Duration .... Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

To meet the growing demand for telecommunications services, new exchanges have to be constructed in the urban areas.

2. Nature and constituent parts

Locate the exchange position, construct buildings, specify and purchase exchange equipment, construct associated cable networks.

III. Justification; economic analysis

1. Context and benefits

Additional exchanges are needed to keep pace with the rapid increase in demand for telecommunication services in the urban areas. New exchanges will help to keep pace with expanding systems switching requirements.

2. Cost

The cost of the project is $5.10 million financed by the State.

IV. Status

Rehabilitation of Bamenda network under implementation.

Project No. TEP-06-004

CAMEROON: RENOVATION OF URBAN NETWORKS IN SIX TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Purchase and installation of underground and overhead cables in six towns

Location: Cameroon

Cost: $7.50 million

External financing required: None

Duration of project: Three years

Desirable starting date: 1984

Project initiator: Post and Telecommunications Office

Project management authority: Post and Telecommunications Office

II. Description

1. Aim and objectives

The objective is to rehabilitate and extend the urban cable network.

2. Nature and constituent parts

Study, specify, purchase and install underground and overhead telephone cables in six towns.

III. Justification; economic analysis

1. Context and benefits

Investment in telephone and telex exchanges is dependent on a good and reliable telephone cable network to complement the switching capacity. An improved network in Cameroon will allow more efficient utilization of existing and future exchange capacity.

2. Cost

The cost of the project is $7.50 million financed by the State. Some of the investment will fall within phase I of the Decade.

Project No. TEP 06-006

CAMEROON: FREQUENCY MONITORING AND RECEIVING STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Establishment of a radio receiving and monitoring station

Location: Cameroon

Cost: $1.60 million

External financing required: $1.60 million

Duration of project:

Desirable starting date: End of 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts, Telecommunications and Equipment Office

II. Description

1. Aim and objective

The planned receiving and monitoring station will make it possible to solve problems related to the monitoring of radio emissions and the study of electromagnetic waves propagation, and thus help provide a wider choice of frequencies for new links, and make it possible for new frequencies to be allocated when users are not satisfied with old frequencies.

2. Nature and constituent parts

The project comprises:

- Feasibility study and preparation of technical documents;
- Purchase and installation of equipment for the station;
- Training of staff to man the station.

III. Justification; economic analysis

1. Context and benefits

Today, Cameroon has an extended network of private radio links used by more than 200 licence holders. This presents serious problems in respect of monitoring of emissions and management of frequencies. Moreover, the lack of control over frequency monitoring leads to a considerable loss of earnings due to irregular and inadequate payment of fees for the use of the links. This station can serve as a subregional radio emission station and thus become part of the world monitoring system.

2. Cost

The cost of the project is estimated at $1.60 million.

Project No. TEP-06-008

CAMEROON: CONSTRUCTION (FIRST PHASE) OF A DOMESTIC SATELLITE NETWORK FIRST PHASE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction (first phase) of a domestic satellite network (four stations)

Location: Cameroon

Cost: $12.70 million

External financing required: $12.70 million

Duration: Two years

Desirable starting date: 1984

Project initiator: and Telecommunications Office

Project management authority: Posts, Telecommunications and Equipment Office

II. Description

1. Aim and objective

The domestic satellite project should make it possible to rehabilitate transmission routes on which operating difficulties are being experienced; later, it will contribute to a total national coverage by television and sound broadcasting.

2. Nature and constituent parts

The project comprises:

- Construction of buildings;
- Purchase and installation of 4 earth stations;
- Training of staff to man the network.

III. Justification; economic analysis

1. Context and benefits

Traffic density and increase in demand for information transmission, make this project more than imperative. The project is financially justified, in view of the large number of potential users of such a network and its consequent profitability.

2. Cost

The cost of the project has not yet been determined, but the initial phase which comprises construction of a single station in the north of the country is estimated at a cost of $12.70 million.

Project No. TEP-06-009

CAMEROON: ESTABLISHMENT OF A REPAIR LABORATORY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Establishment of a repair laboratory

Location: Cameroon

Cost: $0.83 million

External financing required: $0.83 million

Duration of project: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts, Telecommunications and Equipment Office

II. Description

1. Aim and objective

The function of the laboratory will be to repair broken down equipment so that maintenance of the national network can be controlled more efficiently. The laboratory can also serve as a back-up institution for the "Ecole Nationale Superieur des Postes et Telecommunications" (The advanced national posts and telecommunications school) in Cameroon.

2. Nature and constituent parts

The project comprises:

- Construction of the building;
- Purchase and installation of measuring and repair equipment;
- Training of staff to work at the laboratory.

III. Justification: economic analysis

1. Context and benefits

Cameroon has a very dense telecommunications network, the result of the installation of a large quantity of equipment. Maintenance of the network is therefore very difficult and is largely dependent on the availability of spare parts. Since investments involved in efficient maintenance of the network is very high, it was thought fit to create a unit for repairing broken down equipment. The existence of such a unit will help eliminate long periods of waiting for foreign companies to undertake maintenance work and also reduce service costs.

2. Cost

The cost of the project is estimated at $0.83 million.

Project No. TEP-07-001

CAPE VERDE: EXTENSION OF TELECOMMUNICATIONS SERVICES TO THE RURAL COMMUNITIES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Study of rural telecommunications services, specification, supply and installation of equipment

Location: Cape Verde

Cost: $4.50 million

External financing required: $4.50 million

Duration: 30 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: PTT/Ministry of Transport and Communications

II. Description

1. Aim and objective

The purpose of the project is to integrate the rural communities of this island country into the main economic life through the provision and extension of telecommunication facilities.

2. Nature and constituent parts

The project has two constituent parts:

- A study to determine the requirements of the rural communities; and
- The implementation of the studies. This will involve a detailed engineering of the rural system and the preparation of tender document as well as the invitation to tender, the evaluation of tenders, the supply and installation of equipment and the training of local personnel to operate and maintain the installed equipment. The equipment are single and multi-channel VHF and aerial cables.

III. Justification: economic analysis

1. Context and benefits

Cape Verde consists of 10 islands, nine of which are inhabited, and covers an area of 4,077 km^2. These islands are spread over an area of about 86,000 km^2. Communications between the islands is crucial for the efficient management and governing of the country. In most cases the existing links are far from adequate and there is an urgent need to improve them. Rural areas are especially poorly served with telecommunications services. This apparent neglect of the rural areas has been recognized by the authorities and the current development plan places great emphasis on the extension of service to rural areas.

The implementation of this project is expected to contribute towards raising the quality of life in the rural areas, which are responsible for a high proportion of domestic food production. In addition, the provision of improved telecommunications services between the islands will enhance the efficient administration of the country and proper management of trade and commerce.

In the social area, the project will reduce the isolation of some of the islands and rural communities and thus contribute towards the social and political cohesion of the country.

2. **Cost**

	In million $
Study	0.04
Supply of equipment and installation	4.36
Training	0.10
Total	4.50

Prcject No. TEP-08-001

CENTRAL AFRICAN REPUBLIC: REHABILITATION OF BANGUI-MBAIKI AND BANGUI-BERBERATI-GAMBOULA-CAMEROON MICROWAVE LINES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Rehabilitation of the Bangui-Mbaiki and Bangui-Berberati-Gamboula microwave links

Location: Central African Republic

Cost: $0.60 million

External financing required: $0.60 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Office centrafricaine des postes et télécommunications (OCPT)

Project management authority: Office centrafricaine des postes et télécommunications

II. Description

1. Aim and objective

The microwave links to be rehabilitated were installed in 1974 but have never operated due to certain incompatibilities with existing equipment. This project seeks to resolve these problems and make the links fully operational.

2. Nature and constituent parts

If the already installed system can be rehabilitated and made compatible with the existing systems, it will be reactivated after the necessary modification and improvements. If that proves relatively costly, then a new and improved system will be purchased and installed.

III. Justification: economic analysis

1. Context and benefits

This project will allow for reliable communications with the countries of the subregions; expand telecommunication services to the countryside establish a communication link with the port of Douala; and extend the PANAFTEL network.

2. Cost

The total cost of the project has been estimated at $0.60 million.

Project No. TEP-08-002

CENTRAL AFRICAN REPUBLIC: INSTALLATION OF TROPOSPHERIC SCATTER LINK BANGUI-IMPFONDO (CONGO)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Purchase and installation of tropospheric scatter equipment

Location: Bangui

Cost: $1.50 million

External financing required: $1.50 million

Duration: Six months

Desirable starting date: 1984

Project initiator: Office centrafricaine des postes et télécommunications (OCPT)

Project management authority: Office centrafricaine des postes et télécommunications

II. Description

1. Aim and objective

This project is in the PANAFTEL network plan. The section Brazzaville-Impfondo has already been completed. The immediate objective is to complete the Bangui-Impfondo link thus providing reliable communications with Brazzaville and Pointe-Noire.

2. Nature and constituent parts

At Impfondo all the work has been completed by the Congo. What remains is the installation of the same type of equipment (two radio transmitters, four receivers, two antennas 12 m in diameter), multiplex equipment, and station to central office link at Bangui.

III. Justification: economic analysis

1. Context and benefits

Since the Central African Republic is a land-locked country, all its imports and exports transit to neighbouring countries. One of the most important ports for the Central African Republic is Pointe Noire. Establishment of direct communications with this port and Brazzaville will contribute to the development of trade and economic development.

2. Cost

The cost of the project is $1.50 million.

Project No. TEP-08-003

CENTRAL AFRICAN REPUBLIC: REHABILITATION OF LOCAL TELEPHONE NETWORKS IN SEVEN TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Rehabilitation of local networks in seven towns

Location: Central African Republic

Cost: $1.63 million

External financing required: $1.63 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Office centrafricaine des postes et télécommunications (OCPT)

Project management authority: Office centrafricaine des postes et télécommunications (OCPT)

II. Description

1. Aim and objective

The immediate objective is to rehabilitate the telecommunication systems in seven provincial towns, specifically Bouar, Bambari, Berberati, Bangassou, Boali, Carnot and M'baiki.

2. Nature and constituent parts

This project involves the repair of the local telephone networks of the seven towns referred to and covers the following:

- Purchase of subscriber transmission, distribution and installation cables and telephone receivers;
- Civil engineering work and cable laying;
- Rehabilitation of the telephone exchanges;
- Organization of a maintenance unit (stocks of equipment, tools, vehicles).

III. Justification: economic analysis

1. Context and benefits

For lack of sustained maintenance, the local national telephone networks have deteriorated substantially. The lack of telecommunication services within the country impedes socio-economic development. Immediate repair is necessary to avert widespread system failures and service interruptions.

2. Cost

The cost of the project is $1.63 million.

Project No. TEP-08-004

CENTRAL AFRICAN REPUBLIC: REHABILITATION OF THE NATIONAL RADIO COMMUNICATIONS NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase of a stock of spare parts to repair and rehabilitate national radio communication links

Location: Central African Republic

Cost: $1.67 million

External financing required: $1.67 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Office centrafricaine des postaset télécommunications (OCPT)

Project management authority: Office centrafricaine des postes et télécommunications (OCPT)

II. Description

1. Aim and objectives

The objectives are to:

- Rehabilitate, improve and extend the telecommunication services between the various prefectures in a way that will foster economic development;
- Set up a reliable maintenance unit;
- Repair various power plants;
- Build a stock of spare parts.

2. Nature and constituent parts

Construction of buildings, purchase of spare parts and air conditioners; rehabilitation and improvement of radio communication facilities; replacement of vehicles, measuring instruments and tools.

III. Justification: economic analysis

1. Context and benefits

Lack of proper operation and maintenance has damaged the national radio communication network. The proposed project is part of an overall development plan adopted by the Government to provide the rural areas with viable socio-economic infrastructure. The lack of telecommunication services in the interior of the country is a threat to the security of the people and impedes development. This project will markedly improve the quality of telecommunication services to the interior.

2. Cost

The cost of the project is $1.67 million.

Project No. TEP-08-005

CENTRAL AFRICAN REPUBLIC: MODERNIZATION AND EXTENSION OF BANGUI TELEPHONE NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Technical and feasibility studies on the modernization and expansion of the telephone network in Bangui

Location: Bangui

Cost: $13.30 million

External financing required: $13.30 million

Duration: Three years

Desirable starting date: Beginning of 1984

Project initiator: Office centrafricaine des postes et télécommunications (OCPT)

Project management authority: Office centrafricaine des postes et télécommunications (OCPT)

II. Description

1. Aim and objectives

- To develop the telecommunication infrastructure and stimulate economic growth;
- To expand the telecommunication network to cover all parts of Bangui; and
- To improve upon the traffic routing and flow, the quality of transmission and the overall reliability of the facilities.

2 Nature and constituent parts

(a) Exchange

- Increase the capacity of the present exchange from 2,000 to 5,000 lines;
- Provide for maintenance services, stock of equipment, tools, measuring instruments and training of personnel;
- Rehabilitate the present XP100 exchange simulator at the school;
- Provide for consulting services.

(b) Network

- Carry out civil engineering work and increase the capacity of the primary cables to 6400/2 and the distribution cables to 11600/2;
- Set up a maintenance unit;
- Assure the training of national staff.

(c) Building

Construct a garage, warehouse and workshop.

III. Justification: economic analysis

1. Context and benefits

The Central African Republic is a land-locked country and is dependent upon the provision of reliable means of communications for economic and social development.

Telecommunications in Bangui is still one of the means whereby the Central African Republic can communicate with the outside world and thus break the natural barriers that isolate the country. Basic improvements in the principal exchange in Bangui will help to promote the development process.

2. Cost

The cost of the project is $13.30 million.

Project No. TEP-09-001

CHAD: RECONSTRUCTION OF THE SATELLITE EARTH STATION AT N'DJAMENA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Construction of station building; purchase and installation of a standard B earth station and central office link

Location: N'Djamena

Cost: $8.33 million

External financing required: $8.33 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

To reconstruct the earth station damaged during the civil war in 1979.

2. Nature and constituent parts

The work includes construction of station buildings, antenna foundation, specification and purchase of an earth station (Standard B), and construction of a central office communication link.

III. Justification: economic analysis

1. Context and benefits

The only international link the country now has is a single HF radio circuit to Paris, which is unreliable and insufficient to carry the international traffic. The installation of a new earth station will re-establish direct international telephone, telex and telegraph communications.

2. Cost

The cost of the project is $8.33 million.

Project No. TEP-09-002

CHAD: RE-ESTABLISHMENT OF RADIO LINKS BETWEEN N'DJAMENA AND FIVE PROVINCIAL TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Specify, purchase and install microwave links (rehabilitation of disrupted network)

Location: Chad

Cost: $0.83 million

External financing required: $0.83 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

Re-establishment of the radio communication between the capital N'Djamena and the five important regional towns, Abéché, Bol, Faya, Ati and Mongo.

2. Nature and constituent parts

Specify, purchase and install radio and related equipment. Some building improvements and construction for plant accommodation are also required.

III. Justification: economic analysis

1. Context and benefits

All existing communications between the capital N'Djamena and the provincial towns have been disrupted by the civil war. The reconstruction and establishment of improved telecommunication links will enhance national unification and contribute to social and economic development.

2. Cost

The cost of the project is $0.83 million.

Project No. TEP-09-003

CHAD: RECONSTRUCTION OF A TELEPHONE EXCHANGE AND LOCAL CABLE NETWORK FOR ABECHE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Specify, purchase and install a telephone exchange and cable network

Location: Abéché

Cost: $0.34 million

External financing required: $0.34 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

Re-construction of the crossbar automatic telephone exchange and improvement or replacement of the existing cable networks in the town of Abéché.

2 Nature and constituent parts

Specify, purchase and install a suitable automatic telephone exchange. Improve or construct an exchange building. Purchase and install distribution cable network.

III. Justification: economic analysis

1. Context and benefits

Abéché had a 100-line capacity crossbar automatic telephone exchange and cable or overhead line networks for subscriber connection. Recent hostilities have seriously damaged the existing telecommunications plant.

Abéché is one of the important commercial towns of the country. It is situated on the route to the Sudan.

2. Cost

The cost of the project is $0.34 million.

Project No. TEP-09-004

CHAD: INSTALLATION OF A TRUNK TRANSMISSION NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Planning of trunk network; specification, supply and installation of equipment; construction

Location: Chad

Cost: $50.00 million

External financing required: $50.00 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The objective is to provide good quality telecommunication connections between the most important population centres of the country. The connections are planned to include TV transmission.

2. Nature and constituent parts

The work includes: system studies, specification of equipment, routing, numbering plans, equipment purchase, installation, civil works, technical assistance and training of operations and maintenance personnel. Trunks are required for connecting eight major towns and 26 smaller population centres.

III. Justification: economic analysis

1. Context and benefits

In a large country where the populated areas are far from one another, telecommunications plays an important role in enhancing national cohesion. Such a role has political, economic and social implications.

2. Cost

The cost of the project is $50.00 million.

Project No. TEP-10-001

COMOROS: ESTABLISHMENT OF AN EARTH STATION AND INSTALLATION OF INTERNATIONAL SWITCHING EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Establishment of an Earth Station and purchase of associated international switching equipment

Location: Moroni

Cost: $4.00 million

External financing required: $4.00 million

Duration: 30 months

Desirable starting date: Beginning of 1985

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The objective of the project is to improve the international communications of the Comoros.

2. Nature and constituent parts

The project will involve:

- The conduct of feasibility studies in order to determine the maximum capacity of the earth station, the number of groups of circuits, and the appropriate international switching;
- The preparation of technical specifications and the launching of invitations to tender;
- The ordering of equipment, the construction of buildings and civil engineering works;
- The installation and putting into service of the equipment;
- The training of staff.

III. Justification: economic analysis

1. Context and benefits

The international links that the Comoros has are four lines with Paris and one line with Antananarivo. This is just enough for 140,000 minutes of outgoing traffic a year for the 800 subscribers of Moroni. The present network will not be suitable for international traffic from the 2,834 subscribers expected to be in the Comoros in 1985. This project is part of the Government's programme of Action.

The project will improve the Comoros' international communications and help develop trade. Moreover, with the 14 circuits planned for initially, the project will be financially profitable for the Posts and Telecommunicationss Office.

2. Cost

The total cost of the project, including civil engineering works, is $4.00 million.

Project No. TEP-10-002

COMOROS: EXTENSION OF THE MORONI URBAN EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Extension of the existing exchange, installation of a new exchange and extension of the local network

Location: Moroni

Cost: $1.00 million

External financing required: $1.00 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

Provide technical infrastructure to enable the town of Moroni to meet requests for telephone service.

2. Nature and constituent parts

- Preliminary studies, preparation of specifications for the extension to 1,200 lines of the present telephone exchange;
- Feasibility studies on the new exchange and a detailed plan for the extension of the local network;
- Preparation of specifications, ordering of equipment, expansion of the premises, and the installation and putting into operation of equipment;
- Training of staff.

III. Justification: economic analysis

1. Context and benefits

The moroni automatic exchange with a capacity of 800 lines and capable of being increased to 1,200, became saturated three years ago. The Moroni telecommunications development plan provides for 1,414 subscribers in 1985. This is higher than the maximum capacity of the present exchange, especially as there will be 2,000 subscribers in 1990. An extension of the present exchange to its maximum capacity, along with the installation of a new exchange and the extension of the present network, is indispensable.

The project will make it possible to meet subscriber requests in Moroni. Furthermore, considering the special location of Moroni, the project will help improve social and economic activity in the town and throughout the country.

2. Cost

The total cost of the project is $1.00 million. This covers extension work. The creation of a new building is not indispensable.

Project No. TEP-10-003

COMOROS: TELEPHONE EXCHANGES AND LOCAL NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Installation of automatic exchanges, extension of local networks in eight localities

Location: Eight localities in the country

Cost: $7.70 million

External financing required: $7.70 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The objective is to make available telephone infrastructure that will help meet requests for service. This project complements another project under way which will install modern trunk links and modern links between islands.

2. Nature and constituent parts

The project comprises:

- A detailed study of the project;
- Preparation of the technical specifications;
- Supply of equipment and civil engineering works;
- Construction of premises;
- Installation and putting into operation of equipment;
- Training of staff.

III. Justification: economic analysis

1. Context and benefits

Outside Moroni, the capital, the Comoros automatic exchange network has two switchboards with a total capacity of 400 lines. These are completely saturated and this is interfering with the normal conduct of economic and social development activity. The telecommunications development plan indicates that outside Moroni, there will be a demand for 1,420 telephones in 1985 and 2,006 in 1990. The programme under way, involving the installation of microwave relays and overhead lines between islands and within islands, financed by the EDF, BADEA and the Kuwait Fund, will not be profitable unless the local exchanges provided for in the plan for development are improved or constructed.

The project will improve the economic and social development of the country, especially the development of inter-island trade. Moreover, it is indispensable to making the telecommunications development plan financially profitable.

2. Cost

The total cost of the project is estimated at $7.70 million.

Project No. TEP-11-001

CONGO: ESTABLISHMENT OF AN INTERNATIONAL TELEPHONE EXCHANGE

1. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Study, specification, supply and installation of an international telephone exchange; construction of premises

Location: Brazzaville

Cost: $12.00 million

External financing required: $12.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office (ONPT)

Project management authority: National Posts and Telecommunications Office (ONPT)

II. Description

1. Aim and objective

The objective is the complete automation of the international telephone links and an improvement of the quality of service.

2. Nature and constituent parts

The project includes the following main components:

- Feasibility study;
- Specifications;
- Engineering plans;
- Construction of exchange premises;
- Supply and installation of automatic international exchange;
- Supply and installation of interface equipment between national and international exchanges;
- Training of personnel for operations and maintenance.

III. Justification: economic analysis

1. Context and benefits

This project is of the highest importance to enable the Congo to improve markedly its international telecommunications access to neighbouring countries. The present old system requires long delays before making connections. The old system will be retained for stand-by operation in case of emergencies. This project is listed in the 1982-1986 five-year plan which has been approved.

2. Cost

The cost of the project is $12.00 million.

Project No. TEP-11-004

CONGO: EXTENSION OF THE EARTH STATION AT MOUNGOUNI

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Technical studies, acquisition and installation of multiplex equipment and central office-earth station link

Location: Brazzaville/Moungouni

Cost: $0.64 million

External financing required: None

Duration: One year and six months

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office

Project management authority: National Posts and Telecommunications Office

II. Description

1. Aim and objective

To expand international telephone traffic capacity to keep pace with rapidly increasing demand. To realize the financial benefits of substantially increased international traffic. The project will extend the present 24-channel capacity to 84-channels with multiplexing.

2. Nature and constituent parts

The project calls for the acquisition and installation of multiplex equipment both at the earth station and in the terminal station; and the purchase and installation of connecting equipment for implementing the new circuits.

III. Justification: economic analysis

1. Context and benefits

The present earth station was installed in 1978 and is no longer adequate to handle the increased volume of international traffic. The capacity increase will substantially reduce congestion and time-consuming delays in making connections.

2. Cost

The cost of the project is $0.64 million. (State financed)

Project No. TEP-11-006

CONGO: EXTENSION AND REHABILITATION OF URBAN TELEPHONE NETWORKS AND EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Technical studies, site survey and construction of technical buildings, acquisition and installation of telephone exchanges and cables

Location: Brazzaville, Loubomo, Pointe Noire

Cost: $12.10 million

External financing required: $8.00 million

Duration: Three years

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office

Project management authority: National Posts and Telecommunications Office

II. Description

1. Aim and objective

To relieve saturation and congestion of the Brazzaville, Loubomo and Pointe-Noire telephone exchanges. To modernize the network and provide additional capacity for new subscriber growth.

2. Nature and constituent parts

The project consists of land acquisition, purchase of equipment and material for the lines (cables, PVC pipes, etc.), implementation of new telephone exchanges, civil engineering and construction of buildings to house the new equipment.

III. Justification: economic analysis

1. Context and benefits

The project will relieve the present congestion, provide capacity for connection of new subscribers, and contribute to the national economic development, as well as to increased revenue for National Posts and Telecommunications Office. The quality of service will be improved markedly.

2. Cost

The cost of the project is $12.10 million. Approximately $8.00 million in external financing will be required to complete the project. The remainder will be provided by the Government of the Congo.

Project No. TEP-11-007

CONGO: REALIGNMENT OF THE BRAZZAVILLE-POINTE NOIRE COAXIAL CABLE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Feasibility study, construction of buildings, purchase and installation of coaxial cable

Location: Congo

Cost: $1.74 million

External financing required: None

Duration: Two years

Desirable starting date: 1982

Project initiator: National Posts and Telecommunications Office (ONPT)

Project management authority: National Posts and Telecommunications Office (ONPT)

II. Description

1. Aim and objective

To install a new coaxial cable between Brazzaville-Loubomo and Brazzaville-Pointe Noire. The cable currently follows the Brazzaville-Pointe Noire railway, which is being realigned between Bilinga and Loubomo.

2. Nature and constituent parts

The project comprises the following:

- Feasibility study;
- Construction of shelters to house line equipment;
- Supply and installation of coaxial cable.

III. Justification: economic analysis

1. Context and benefits

The Bilinga-Loubomo portion of the line is in bad condition and runs through difficult terrain, making repair and service problematic. The new route will be more direct and offer the additional benefit of connecting 20 new towns of the coaxial system.

2. Cost

The cost of the project is $1.74 million.

Project No. TEP-11-008

CONGO: STUDY AND ESTABLISHMENT OF REGIONAL TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Feasibility study, construction of buildings, acquisition and installation of exchanges and local networks

Location: Congo

Cost: $8.00 million

External financing required: None

Duration: Three years

Desirable starting date: 1982

Project initiator: National Posts and Telecommunications Office (ONPT)

Project management authority: National Posts and Telecommunications Office (ONPT)

II. Description

1. Aim and objective

The project aims at the opening up of the rural areas by the provision of modern telephone and telegraph services. Eleven towns will have new exchanges: Kinukila, Madingan, Sibiti, Mossendjo, Abala, Lekana, Oyo, Mossaka and Boundji.

2. Nature and constituent parts

The project comprises the following:

- A feasibility study and engineering study followed by the construction of additional technical buildings;
- Procurement of automatic telephone exchanges, telephone cables:
  - Installation of these exchanges at 11 towns;
  - Establishment of local networks at 11 towns.

III. Justification: economic analysis

1. Context and benefits

The Government has promoted in the Congo a policy aiming at opening up the rural areas in order to provide the rural population with improved communication facilities.

2. Cost

The cost of the project is $8.00 million, broken down as follows:

	In million $
Feasibility study	0.4
Construction	7.6

This project is included in the 1982-1986 five-year plan and will be State-financed.

Project No. TEP-11-009

CONGO: INSTALLATION OF AN INTERNATIONAL TELEX SWITCHING CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Improvement of existing building; specification, supply and installation of equipment

Location: Brazzaville

Cost: $3.18 million

External financing required: None

Duration: Three years

Desirable starting date: 1981

Project initiator: National Posts and Telecommunications Office (ONPT)

Project management authority: National Posts and Telecommunications Office (ONPT)

II. Description

1. Aim and objective

- Extension of the telex network;
- Automatization of the international telex services to direct subscriber dialing of international calls.

2. Nature and constituent parts

- Improve existing buildings for the new telex centre;
- Purchase and install the equipment for international telex exchange.

III. Justification: economic analysis

1. Context and benefits

The project is necessary to meet the increasing demand for faster and reliable communication as a result of the economic growth of the country.

2. Cost

The cost of the project is $3.18 million (financed by the State). The equipment supply contract has been awarded to SAGEM.

Project No. TEP-12-003

DJIBOUTI: BALBALA TELEPHONE EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Establishment of a new telephone exchange centre in Djibouti

Location: City of Djibouti

Cost: $3.85 million

External financing required: $3.85 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The main objective of the project is to construct a new telephone exchange in the Balbala area in Djibouti, to make it possible to meet all future demands. The present exchange will also be expanded.

2. Nature and constituent parts

The project consists of:

- Feasibility studies and preparation of technical reports;
- Expansion of the existing exchange;
- Construction of technical buildings for the Balbala exchange;
- Purchase of switching and power supply equipment, as well as cables and miscellaneous equipment for improving the network, and their installation;
- Connection of subscribers and putting the service into operation;
- Practical training for operations and maintenance staff.

III. Justification: economic analysis

1. Context and benefits

The local exchange in Djibouti consists of one automatic exchange of 4,000 lines which could be increased to 6,000. It has 2,990 connections, of which 77 are in rural areas. At the 10 per cent average rate of increase in the number of subscribers served over the last decade, the exchange will be saturated in 1985 and, if it is expanded, in 1988.

This will be the final expansion, since the maximum capacity of the exchange will have been reached. It is therefore absolutely essential to have a new urban telephone exchange in Djibouti from 1987 onwards.

This new exchange can neither be installed in the existing buildings nor site since there is no room for extending the buildings.

The present site, with the concentration of people and the major economic activities in the city of Djibouti, offers no possibility at all for the expansion of the exchange.

Saudi Arabia has already accepted to finance the development of the Balbala area. The construction of a new exchange building combined with a preliminary extension of the actual exchange is the best solution for extending the telephone office of Djibouti and at the same time completing the improvement of the Balbala quarters.

2. Cost

The total cost of the project is estimated at $3.85 million.

Project No. TEP-12-004

DJIBOUTI: INSTALLATION OF AUTOMATIC EXCHANGES IN RURAL AREAS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Installation of automatic exchanges in rural areas

Location: Arta, Ali Sabieh, Dikhil, Tadjoura and Obock

Cost: $0.75 million

External financing required: $0.75 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The purpose of the project is to install rural automatic exchanges in the pre-mentioned localities and to improve the distribution of rural telephone subscribers in order to meet their demand.

2. Nature and constituent parts

The project comprises:

- Feasibility studies and invitation to tender;
- Construction of buildings, purchase of automatic exchanges, power supply equipment and accessories and their installation; and
- Connection of subscribers and putting the service into operation;
- Training of operations and maintenance staff.

III. Justification: economic analysis

1. Context and benefits

The telephone network in the Republic of Djibouti consists mainly of the Djibouti local exchange to which all subscribers in the country are connected.

Apart from those in the Djibouti urban centre, all the other subscribers are concentrated in Arta, Ali Sabieh, Dikhil, Tadjoura and Obock.

They are connected to the local Djibouti exchange from their areas via the following radio-relay channels:

2 GH_2 M bits (480 channel) Djibouti-Arta

2 GH_2 120 channels Arta-Dikhil relay and
60 channels Dikhil-Dikhil Village relay
60 channels Dikil-Ali Sabieh
120 channels Arta-Tadjoura
120 channels Arta-Obock

The cost of each extension is constant, approximately $10,000.

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This set up does not favour meeting the demand for rural telephone exchange under good financial conditions.

Theoretically, the maximum capacity of the network is 480 subscribers for the five rural exchanges.

The project will make it possible to connect up to 600 subscribers whilst the radio-relay is in operation at a marginal cost of about $2,000 per subscriber. This will depend mainly on the automatic exchanges and the existing network, or a damping period of about eight years.

This project is of great benefit to the Posts and Telecommunications Office and the Government of Djibouti financially, and also from the point of view of almost integrating rural areas completely in the national telephone system.

2. Cost

The cost of the project is estimated at $0.75 million including study, buildings, procurement and installation of equipment and training.

Project No. TEP-12-005

DJIBOUTI: SUBMARINE CABLE SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Construction of a submarine cable terminal and provision of submarine cable circuits

Location: Djibouti

Cost: $8.00 million

External financing required: $8.00 million

Duration:

Desirable starting date: 1986

Project initiator: Ministry of Interior, Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objectives

- short-term objective: to link up the countries of South-East Asia, Middle East and Western Europe and the countries in Africa and America by connecting this cable to the African PANAFTEL networks, the Medarabtel interregional area and the Arab network by means of the Arabsat satellite from Djibouti.
- medium- and long-term objectives (regional): to connect the four networks of the regions above, first to the southern African and South Sea Islands network by the Madagascar-Djibouti submarine cable and then by the Djibouti-Oman cable to the Gulf countries. The final objective is to link up all the networks of the world.

2. Nature and constituent parts

The share of Djibouti in financing the project, includes:

(a) Purchase and installation of the cable system for the Djibouti-Colombo, Djibouti-Jeddah sections.

(b) Study, supply and installation of the submarine cable terminal - this project is part of the vast Medarabtel project (Projet de télécommunications internationales des Pays du Moyen Orient et du Bassin Méditerranéen)

and comprises the following activities:

- Supply submarine cable and repeaters;
- Lay submarine cable;
- Construct cable store;
- Construct cable terminal;
- Provide transport vehicles;
- Construct housing for technical staff.

III. Justification: economic analysis

1. Context and benefits

Due to its peculiar geopolitical position as the junction between Africa and the East, its Arab-African character, its strategic position, its stable domestic political atmosphere, its legendary wisdom and its absolute neutrality as a land of exchanges and encounters, Djibouti has been chosen by several international and regional organizations as a telecommunications transit and interconnection centre. In order to play its role as the link of international activities more efficiently, Djibouti owes it to itself, despite its meagre resources, to honour its commitments to the international community. Moreover, since the economy of Djibouti depends exclusively on services, it is absolutely necessary that Djibouti expands its telecommunications infrastructure and services through diversification of systems and routing and also raise the quality of services provided to the highest possible standard.

2. Cost

The total cost of the project has been estimated at $8.00 million.

Project No. TEP-13-001

EGYPT: CONSTRUCTION OF ASWAN-WADI HALFA (SUDAN) MICROWAVE LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Specify, supply and install microwave link

Location: Southern Egypt (Aswan) and norther Sudan (Wadi Halfa)

Cost: $20.00 million

External financing required: $20.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Egyptian Telecommunications Authority

Project management authority: Egyptian Telecommunications Authority

II. Description

1. Aim and objective

To complete the Aswan-Wadi Halfa section of the PANAFTEL network. This will form part of the wide-band link from Cairo to Khartoum and Khartoum to Addis Ababa.

2. Nature and constituent parts

- Complete feasibility study;
- Survey route Aswan-Wadi Halfa;
- Specify, supply and install microwave and related transmission equipment;
- Construct repeater station buildings.

III. Justification: economic analysis

1. Context and benefits

The proposed project forms part of the PANAFTEL route structure. It will provide a wide-band high-capacity link for telephone, telegraph, telex and video transmission.

2. Cost

The cost of the project is $20.00 million.

Project No. TEP-14-001

EQUATORIAL GUINEA: ESTABLISHMENT OF A SATELLITE EARTH STATION AND RELATED FACILITIES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Specify, purchase and install a satellite earth station and related equipment

Location: Bata

Cost: $8.00 million

External financing required: $8.00 million

Duration: Two years

Desirable starting date: 1983

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

To overcome the difficulty of the present international communications of Equatorial Guinea, a satellite earth station is to be established

2. Nature and constituent parts

Purchase and install:

- A Standard B satellite earth station, initially equipped for eight telephone, four telegraph and telex and one TV channels;
- An international transit exchange;
- An automatic telex exchange; and
- A microwave link between earth station and international exchange.

III. Justification: economic analysis

1. Context and benefits

At present Equatorial Guinea has two international telecommunication outlets from Malabo: a UHF radio link with five telephone and three telegraph channels with Douala ([illegible] Cameroon) and an HF radio link for four telephone and three telegraph channels with Madrid. Due to technical and other problems these systems do not function properly and are inadequate to handle the volume of international traffic.

The satellite earth station would be a reliable alternative and allow direct access to other countries and transit facilities.

2. Cost

The cost of the project is $8.00 million.

Project No. TEP-14-002

EQUATORIAL GUINEA: REHABILITATION OF LOCAL TELEPHONE NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase and installation of aerial cables for local telephone network

Location: Bata and Malabo

Cost: $0.36 million

External financing required: $0.36 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The aerial urban cable networks at Malabo and Bata are deteriorating rapidly due to local climatic conditions. The project is to replace the network with plastic shielded cable.

2. Nature and constituent parts

Make detailed study of requirements, specify and order plastic cables (about 34 km) and install with local telecommunication trainees.

III. Justification: economic analysis

1. Context and benefits

The aerial cable network was supplied and constructed recently by the Peoples' Republic of China as part of its technical assistance. However, the local climate (extreme humidity and high temperature) is gradually rendering the cable unusable. The proposal to change the cable is also connected with training of local staff for construction and maintenance of networks.

2. Cost

The cost of the project is $0.36 million.

Project No. TEP-14-003

EQUATORIAL GUINEA: PROVISION AND INSTALLATION OF A TELEX AND INTERNATIONAL TELEPHONE EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Specify, purchase and install telex and telephone switchboard equipment

Location: Malabo

Cost: $0.18 million

External financing required: $0.18 million

Duration: Two years

Desirable starting date: 1982

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

As an alternative to the full implementation of TEP-14-001, the satellite earth station project, this project would strengthen and improve the Malabo-Douala link and rent direct satellite channels from the United Republic of Cameroon at a cost of $25,000 per channel per year.

2. Nature and constituent parts

Feasibility study, specify, purchase and install equipment for:

- Telex exchange;
- International telephone exchange;
- Increase the Malabo-Douala link by eight telephone and one telegraph and telex channels;
- Employ expert for implementation and training of operational personnel.

III. Justification: economic analysis

1. Context and benefits

At present Equatorial Guinea has two international telecommunications outlets from Malabo:

- A UHF radio link with five telephone and one telegraph channels with Douala (Cameroon);
- An HF radio link for four telephone and three telegraph channels with Madrid.

Present arrangements are not satisfactory. By improving and strengthening the Malabo/Douala link, installing international telex and telephone exchanges at Malabo, and leasing satellite channels from [illegible] Cameroon, a more satisfactory and flexible communication capability will be available.

2. Cost

The cost of the project is $0.18 million.

Project No. TEP-15-001

ETHIOPIA: RURAL SUBSCRIBER RADIO SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Pilot rural subscriber

Location: Awash Valley

Cost: $0.60 million

External financing required: $0.60 million

Duration: One and a half years

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

To carry out a pilot project in the Awash Valley and through it to test and evaluate the available technology and identify constraints and critically assess its applicability to other rural development projects in the country.

Providing good telephone service in the Awash Valley area, where many sparsely distributed farms and small towns exist, has presented problems to the Ethiopian Telecommunications Authority. The cost of installing conventional telephone pole lines is extremely high and maintenance problems would be also high because of unfavourable weather conditions.

One approach to give telephone service to the area is to use a subscriber radio system, which is a point-to-multipoint VHF system consisting of a central and a number of outstations.

Project No. TEP-15-002

ETHIOPIA: JIJIGA-GODE TROPOSCATTER LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Acquisition of equipment and installation

Location: Jijiga and Gode

Cost: $1.20 million

External financing required: $1.20 million

Duration: One and a half years

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

The main objective is to provide a reliable and good quality service to Gode town to support agricultural development in the area.

2. Nature and constituent parts

The project will comprise the supply of equipment including antenna and diesel generator sets for the troposcatter link to be implemented between Gode and Jijiga. Services of the supplier personnel will also be required for supervision of installation and testing of the equipment and the integrated system.

III. Justification: economic analysis

1. Context and benefits

The implementation of the project will permit the unreliable HF link currently existing between Gode and Addis Ababa to be replaced and to render a dependable and efficient service to the town by connecting it to the trunk microwave network terminating at Jijiga. In view of the vast agricultural developments going on in the area, the intended service will give a great support to this sector of the national economy. Since Gode is a very remote town along the border, construction of line-of-sight system is difficult and maintenance and operation would also involve a high cost.

2. Cost

The cost of the project is estimated at $1.20 million including cost of procurement of equipment and installation and test supervision support services

Project No. TEP-15-003

ETHIOPIA: EXTENSION OF AUTOMATIC EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Extension of the satellite and microwave trunk circuits and grading the exchange for full automatic service

Location: Addis Ababa

Cost: $1.80 million

External financing required: $1.80 million

Desirable starting date: 1984

Duration: 12 - 18 months

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

To extend the satellite and microwave trunk circuits terminating at the international telephone exchange in Addis Ababa and also to upgrade the international exchange.

The installed capacity of the international exchange is 300/300 trunk lines. An expansion by 200/200 lines is planned. In addition, the exchange has to be upgraded to improve the efficiency of the operator service and to enable call charging to be carried out automatically and to eliminate the need for toll tickets by the use of magnetic tape recording of calls which can then be fed directly into the billing process.

2. Nature and constituent parts

- Procurement of the required number of trunks, other common equipment and magnetic tape to enable automatically recorded chargeable details;
- Service of an expert for six to nine months to supervise the installation and tests.

III. Justification: economic analysis

1. Context and benefits

The implementation of the project will improve the efficiency of the operator service and because all call-records including the operator's identify are necessarily recorded by the system the possibility of human error leading to inaccurate billing is virtually eliminated.

2. Cost

The project is estimated at $1.80 million and this includes cost of junction circuits, toll ticketing equipment and the services of one expert for a period of six to nine months.

Project No. TEP-15-004

ETHIOPIA: GORE-GAMBELA MEDIUM-CAPACITY UHF SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply of UHF radio equipment, antennas, power supply and associated remote supervision service.

Location: Gore, Gambela and two intermediate repeaters

Cost: $0.84 million

External financing required: $0.84 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

The project is aimed at providing a reliable and high-quality service to the public and also to support the large-scale agricultural developments going on in the area around Gambela.

2. Nature and constituent parts

The project will comprise the following activities:

- Procurement of equipment and test facilities and establishment of two terminal stations at Gore and Gambela and two intermediate repeaters in between;
- Installation and commissioning of the system with the aid of foreign supervisors and ultimate integration of the system to the trunk microwave network currently terminating at Gore.

III. Justification: economic analysis

1. Context and benefits

The implementation of the project would play a big role towards the penetration and improvement of the telecommunications service in the rural areas and as support for the intensification of the national development scheme.

2. Cost

The cost of the project is $0.84 million. This amount covers the UHF radio networks, antenna, power supply and installation supervision charges. Local cost of the project is own financing.

Project No. TEP-15-005

ETHIOPIA: GONDAR-HUMERA TROPOSCATTER LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Troposcatter radio link

Location: Gondar, Humera

Cost: $1.20 million

External financing required: $1.20 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

To provide a reliable and high-quality telecommunications service to Humera which is presently engaged in a massive agricultural development.

2. Nature and constituent parts

The project will comprise purchase of two rural troposcatter radio terminals and associated antennas, power supply, test facilities, etc., for Humera and Gondar and implementation of the same under suppliers foreign supervision. The system will ultimately have access to the national network through the microwave network currently under operation between Gondar and Addis Ababa.

III. Justification: economic analysis

1. Context and benefits

In order to intensify the agricultural developments currently going on around Humera the establishment of a reliable and good quality telecommunications service is essential. Owing to the remoteness and rugged terrain condition of the area implementation of a line-of-sight UHF system is not secured and practicable.

2. Cost

The cost of the project is estimated at $1.20 million and this includes cost of purchase of equipment and foreign installation supervisory services.

Project No. TEP-15-006

ETHIOPIA: IMPLEMENTATION OF BROADBAND MICROWAVE LINK BETWEEN ASSAB (ETHIOPIA) AND DJIBOUTI

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of equipment

Location: Assab, Ganga Debub

Cost: $0.96 million (Ethiopian portion)

External financing required: $0.96 million

Desirable starting date: 1984

Duration: Three years

Project initiator: Ministry of Transport and Communications

Project management authority: Ethiopian Telecommunications Authority

II. Description

1. Aim and objective

The link will form part of the PANAFTEL and the Middle East and Mediterranean basin network to provide a high-quality and dependable telecommunications service between Ethiopia and Djibouti and as well serve as trunk route between the Arabian Peninsula and East Africa.

2. Nature and constituent parts

- Procurement of equipment for one terminal station at Assab and an intermediate repeater at Ganga Debub (Ethiopia);
- Foreign installation supervision services for a period of about six months.

III. Justification: economic analysis

1. Context and benefits

Djibouti is one of the two principal ports handling Ethiopia's foreign trade as well as a terminal of the Ethiopian railway system. There are also close cultural, social and economic relations between the two countries. Hence the need of the project is to cater for their services and also to serve as one of the traffic gateways to the Arabian Peninsula.

2. Cost

The estimated cost of the project for the Ethiopian portion of the link is $0.96 million. The total cost of the project including Djibouti portion is $1.54 million.

Project No. TEP-15-007

ETHIOPIA: IMPLEMENTATION OF ETHIOPIA-SUDAN (BAHR DAR-GEDAREF) MICROWAVE RADIO-RELAY SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of equipment

Location: Bahr Dar, Washa Indiras, Chilga and Metema

Cost: $1.84 million (Ethiopian portion)

External financing required: $1.84 million

Duration: Two years

Desirable starting date: 1984

Project initiator: The Governments of Ethiopia and the Sudan

Project management authority:

II. Description

1. Aim and objective

There is practically no communication between the neighbouring countries of Ethiopia and the Sudan. The main objective of the Ethiopia-Sudan link is the installation of a reliable microwave radio system to facilitate the establishment of high-quality telephone and telex system between the two countries without the need to go through centres outside Africa. The link forms an important part of the PANAFTEL in Eastern Africa. National circuits along the route are also required.

III. Justification: economic analysis

1. Context and benefits

Part of the approved on-going PANAFTEL project, the content and benefit of which is already justified.

2. Cost

Estimated cost of the project for the portion of the network to be implemented in Ethiopia up to the border interface at Metema is $1.84 million. This includes cost of procurement of equipment, installation and test support services and other local expenditures. The total cost of the project including the Sudan portion is $4 million.

Project No. TEP-16-001

GABON: EXTENSION OF THE TELECOMMUNICATIONS NETWORK (NORTHEAST AXIS)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction; specification, supply and installation of equipment; microwave link and training of technical staff

Location:

Cost: $15 million

External financing required: $15 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The purpose is to provide high-quality transmission, with automatic connection, among main telephone exchanges, thereby providing direct dialling facilities on the North east Axis of the network and in the capital city. The link will be connected in the north with Cameroon. It will also provide channels for audio and video transmission to broadcasting stations along the route.

2. Nature and constituent parts

Construction of buildings and access roads; supply, installation and commissioning of the microwave and multiplex equipment, power supply, antennae and television transmitters; provision of test equipment for the proper functioning of the facilities; provision of experts by the equipment supplier to train local technical staff on the installation, operation and maintenance of the equipment.

III. Justification: economic analysis

1. Context and benefits

Telephone and telegraph switching equipment is already installed in the main towns that are to be connected by this project. The connection will raise the degree of utilization of the system, thereby generating increased revenue for the service. The project will also enhance the quality of broadcasting services in the region under consideration and provide a high-capacity international link to Cameroon.

2. Cost

The cost of the project is estimated at $15 million.

Project No. TEP-16-002

GABON: ESTABLISHMENT OF COASTAL COMMUNICATIONS STATION AT LIBREVILLE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction; supply and installation of equipment

Location: Libreville

Cost: $12.10 million

External financing required: $12.10 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

Observations: Project transferred from Phase I.

II. Description

1. Aim and objective

The purpose is to establish a coastal station for transmitting and receiving radio communications with ships, in order to provide services as required by international regulations for the safety of life at sea.

2. Nature and constituent parts

- Construction of a station building; supply and installation therein of radio receiving equipment and all necessary auxiliary equipment, a receiving antenna, and an emergency power generating set;

- Transmitting station, comprising radio transmitting equipment and all necessary auxiliary equipment, a transmitting antenna, and an emergency power generating set;

- Provision of link between the transmitting and receiving stations.

III. Justification; economic analysis

1. Context and benefits

Gabon has a coastline of over 800 km and important ports. A large number of ships call at its ports to transport exports of oil, minerals, timber etc, and to unload import cargoes. The provision of an efficient coast station for telecommunicationsnot only contributes to safety at sea, but also makes for greater efficiency in handling shipping at the ports.

2. Cost

The cost of the project is estimated at $12.10 million, to be financed from external sources.

Project No. TEP-16-003

GABON: EXTENSION OF TELECOMMUNICATIONS NETWORK (SOUTHERN AXIS)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction; supply and installation of equipment; and training of technical staff

Location:

Cost: $16 million

External financing required: $16 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The purpose is to provide high-quality transmission, with automatic connection among the main telephone exchanges of the Southern Axis and the capital city, thereby facilitating direct dialling by subscribers connected to those exchanges. The link will be connected in the south with the Congo. It will also provide channels for audio and video transmission to broadcasting stations along the route.

2. Nature and constituent parts

Construction of buildings and access roads; supply, installation and commissioning of the radio relay systems, multiplex, power supply equipment, associated antennae and television transmitters; provision of test equipment for the proper functioning of the facilities; provision of experts by the equipment supplier to train local technical staff on the installation, operation and maintenance of the system.

III. Justification; economic analysis

1. Context and benefits

Telephone and telegraph switching equipment is already installed in the main towns that are to be connected by this project. The project will upgrade the service to permit automatic dialling among the interconnecting towns and the capital city. The degree of utilization of the system will be raised, thereby generating increased revenue. The project will also enhance the quality of broadcasting services in the region under consideration and provide a high-capacity international link to the Congo.

2. Cost

The cost of the project is estimated at $16.00 million, to be financed by external sources.

Project No. TEP-17-001

THE GAMBIA: NATIONAL TRUNK SWITCHING CENTRE, BANJUL

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Provision of equipment: and training of personnel

Location: Banjul

Cost: $0.78 million

External financing required: None

Duration: Two years

Desirable starting date: Project in progress

Project initiator: Ministry of Works and Communications

Project management authority: Ministry of Works and Communications

II. Description

1. Aim and objectives

The purpose of this project is to provide facilities to switch calls domestically within the Gambia and to permit interconnection with the international trunk switching centre in Banjul.

2. Nature and constituent parts

The project involves the supply and installation of transit exchange equipment and the training of personnel to operate and maintain the exchanges.

III. Justification; economic analysis

1. Context and benefits

The proposed exchange will switch calls between Banjul and the following automatic exchanges: Barra, Brikama, Serrekunda and Yundum. If necessary, access will be provided initially on a semi-automatic instead of automatic basis. Later, fully automatic switching will be provided by undirectional circuits to the following rural exchanges: Bansang, Basse, Georgetown, Kaur, Kerewan, Kantaur and Mansakanko.

It is estimated that 200 circuits will be needed to meet expected demand in 1984. Provision will be made for the circuits to give access on a semi-automatic and/or fully automatic basis to the international trunk exchange.

2. Cost

The cost of the project is estimated at $0.78 million.

Project No. TEP-17-002

THE GAMBIA: BANJUL TELECOMMUNICATIONS PROJECT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Feasibility study: procurement and installation of equipment; establishment of a training school

Location: Greater Banjul

Cost: $17.50 million

External financing required: $17.00 million

Duration: Three years

Desirable starting date: 1984 (feasibility study)

Project initiator: Ministry of Works and Communications

Project management authority: Telecommunications Department

II. Description

1. Aim and objective

The objective is to provide adequate telecommunications services for stimulating economic development; and to increase the linkage with the Pan-African Telecommunications Network.

2. Nature and constituent parts

The project involves equipment supply and training facilities. The following components are included:

- A feasibility study;
- Replacement of the local telephone exchange and outside plant in the Greater Banjul area by equipment of greater capacity;
- Provision of an automatic international telephone exchange;
- Extension of network to 20 rural centres;
- Establishment of a training school.

III. Justification; economic analysis

1. Context and benefits

Cash flow projections show internal rates of return of 5 per cent, 11.4 per cent, and 17.9 per cent assuming three alternative levels for the basic charge unit; the current level and two higher levels still comparable with tariffs prevalent in the region.

2. Cost

The cost of the project is estimated at $17.50 million.

Project No. TEP-17-004

THE GAMBIA: BACKBONE RURAL TELECOMMUNICATIONS TRANSMISSION SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Survey; specification, procurement and installation of equipment; and training of staff

Location: Banjul and Basse

Cost: To be determined after the survey

External financing required: Entire amount

Duration: Five years

Desirable starting date: 1984

Project initiator: Ministry of Works and Communications

Project management authority: Telecommunications Department

II. Description

1. Aim and objective

The aim of the project is to improve communications between Banjul and the provincial capitals by replacing the existing 60-channel UHF link. The long-term objective is to eradicate the administrative and managerial bottle-neck in the Upper Division of the country caused by the poor communications service which that link provides.

2. Nature and constituent parts

The project involves the construction of a 960-channel microwave radio relay link between Banjul and Basse, a distance of 480 km. The link will be used to transmit both telephone and television signals, the latter on the stand-by channel.

As far as possible, the buildings which house the existing UHF link will be utilized. The essential components of the project are:

(a) A feasibility study;

(b) Preparation of equipment specifications and engineering designs;

(c) Supply and installation of:

- Microwave and multiplex equipment;
- Aerials, feeders and supporting structures;
- Power supply;

(d) Training of staff in operation and maintenance of equipment.

III. Justification; economic analysis

1. Context and benefits

The existing 60-channel UHF link between Banjul and Georgetown is saturated. There is therefore an urgent need to provide more circuits in order to improve communications with the agricultural hinterland. The Five-year Development Plan 1982-1986 places great emphasis on the improvement of life in rural and remote urban areas. The proposed high-capacity system will permit easy dropping and inserting of channels in order to collect traffic at regional towns and rural centres such as groundnut depots and agricultural co-operatives. To ensure continuing efficient functioning of the system, training facilities are considered essential.

2. Cost

The cost of the project has yet to be determined. It would have to be financed from external sources.

Project No. TEP-17-005

THE GAMBIA: PROVISION OF NINE LOW-CAPACITY AUTOMATIC TELEPHONE EXCHANGES IN THE RURAL AREAS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged countries

Nature: Specification, procurement and installation of equipment, training of maintenance personnel

Location: Barra, Farafanni, Kaur, Kantaur, Basse, Kerewan, Mansakonko, Georgetown, Bansang

Cost: $3.10 million

External financing required: $2.80 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Ministry of Works and Communications

Project management authority: Telecommunications Department

II. Description

1. Aim and objective

The aim of the project is to replace obsolete telephone exchanges in nine rural centres in order to maintain a reasonable grade of service and to meet growing demand, which cannot be satisfied due to saturation of the existing systems.

2. Nature and constituent parts

(a) Specification, supply and installation of equipment for low-capacity rural automatic exchanges in nine centres, as follows:

	Capacity (number of direct exchange lines)	
Location	Initial	Final
Berra	100	200
Farafanni	500	1 000
Kaur	100	200
Kantaur	50	100
Bansang	500	1 000
Basse	500	1 000
Kerewan	100	200
Mansakonko	500	1 000
Georgetown	50	100

(b) Training of personnel to maintain the equipment to be installed.

III. Justification; economic analysis

1. Context and benefits

The aged and obsolete 50-line step-by-step exchange equipment installed in the towns of Barra, Farafanni, Kaur, Basse, Kantaur and Bansang, is extremely difficult to maintain at a standard which would provide a reasonable quality of service. The manufacturers of the exchange equipment have informed the Telecommunications Department of their inability to supply spare parts because production of that particular equipment has ceased. To keep the installed equipment working, the Telecommunications Department has been forced to cannibalize spare complete equipment as spare parts. Moreover, the existing automatic exchanges have reached their ultimate capacity and cannot meet present, growing demand. The exchanges should therefore be replaced immediately to avoid a potential interruption of service. Georgetown, Mansakonko and Kerewan are served by manual switch boards, which provide a slow and inefficient service. These deficiencies have become intolerable and there is an urgent need to improve service to these important administrative centres.

Improvement of telecommunications facilities in provincial areas conforms to the declared policy of developing infrastructural facilities in the hinterland of the country, in order to speed up the resuscitation of economic activities in the depressed countryside. It will contribute greatly towards slowing migration from the provinces to the capital. The project is expected to have a major impact on agricultural production in the provinces by providing good means of communication.

The new exchanges will also improve communication between these rural areas and the capital, Banjul.

2. Cost

The cost is estimated at $3.1 million, of which $0.3 million is expected to be financed locally.

Project No. TEP-18-001

GHANA: REHABILITATION OF TAKORADI AND TEMA COAST RADIO STATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction and installation of additional equipment

Location: Takoradi and Tema

Cost: $3.05 million

External financing required: $3.05 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The objective is to provide reliable maritime communication services for ships plying the west coast of Africa, in order to facilitate safe berthing of ships at Tema and Takoradi harbours and to increase revenue from those services.

2. Nature and constituent parts

The project comprises the following:

(a) Takoradi Coast Radio Station

Provision and installation of additional equipment, including a radio beacon, stand-by power generating plant, 60-channel UHF and multiplexing equipment, a radio terminal and other accessories.

(b) Tema Coast Radio Station

Provision and installation of additional equipment, including a radio beacon, 60-channel UHF and multiplexing equipment and spares.

III. Justification; economic analysis

1. Context and benefits

The nation has an obligation to provide maritime communication services (ship-shore) for the national shipping lines and for foreign ships and fishing vessels that use its ports. The project will enable Ghana to provide better port services for the land-locked neighbours who depend on the two Ghanaian ports for their imports and exports. It will also make travelling in Ghana's territorial waters safer and will generate social and economic activities in the country and subregion, as well as revenue.

2. Cost

The project is estimated to cost $3.05 million, to be financed wholly from external sources.

Project No. TEP-18-004

GHANA: WENCHI-BUI-WA-LAWRA-HAMALE/UPPER VOLTA BORDER UHF RADIO LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction of buildings; and supply and installation of equipment

Location: Brong Ahfo, Northern and Upper Regions

Cost: $5.93 million

External financing required: $4.17 million

Duration Five years

Desirable starting date: January 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The aim is to extend telecommunication facilities to Bui, the site for the proposed third hydro-electric station and to link Ghana to the Upper Volta through Hamale.

2. Nature and constituent parts

The project involves the construction of a 24-channel UHF radio link, with associated multiplex equipment between Bui and Wench; and a repeater station at Kulungu will link Bui with the rest of the country through the Wenchi-Techiman-Sunyani UHF radio link, already under construction, and through Wa to Hamale. The project involves purchase and installation of UHF radio relay equipment and construction of buildings.

III. Justification; economic analysis

1. Context and benefits

The Government plans to construct a dam across the Black Volta at Bui for a hydro-electric project. It is desirable to have very reliable communications between the new township at the dam site and the rest of the country, particularly the capital. There is considerable economic activity between Ghana and the Upper Volta, passing through Hamale on the border; reliable communications are needed to develop this traffic.

It is also proposed to transmit power from the Bui hydro-electric station to the Upper Volta and good communication between the dam site and the Upper Volta is now desirable.

2. Cost

Local financing is estimated at the equivalent of $1,758,500 and the external financing required at $4,174,000.

	Buildings, access roads		Equipment
Local	$1,736,800		$21,700
External	$ 28,500		$4,145,500
Total	$1,765,300		$4,167,200
Grand total		$5,932,500	

Project No. TEP-18-005

GHANA: SUNYANI-BEREKUM-DORMAA AHENKRO-SAMPA/YAMOSIKRO (IVORY COAST) UHF RADIO LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction of buildings, purchase and installation of equipment

Location: Brong Ahafo region

Cost: $2.18 million

External financing required: $0.83 million

Duration: Five years

Desirable starting date: January 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objectives

The main objectives of this project are:

- To provide telephone and telegraph facilities for Berekum, Dormaa Ahenkro and Sampa;
- To link Ghana and the Ivory Coast through Yamosikro.

2. Nature and constituent parts

The project involves the purchase and installation of a 120-channel UHF radio link, with associated multiplex equipment, to provide telephone and telegraph facilities. The link may be extended in future to Yamosikro in the Ivory Coast. New buildings will be constructed at Berekum, Dormaa Ahenkro and Sampa; and in the longer run at Yamosikro.

III. Justification: economic analysis

1. Context and benefits

At present Sunyani and Berekum are linked by 5-channel VHF equipment installed in 1956. Berekum and Dormaa Ahenkro are linked by one overhead wire circuit which is no longer working. The former equipment is obsolete and unreliable, the latter is expensive to maintain and inadequate.

Dormaa Ahenkro is a very important border town and telephone traffic on the Sunyani-Berekum-Dormaa Ahenkro route has increased beyond the capacity of the facilities. The proposed link would service a very important cocoa-growing area, for which efficient telecommunication facilities are vital.

Extension of the link to the Ivory Coast will improve communication between the two countries.

2. Cost

Construction of access roads and buildings estimated at $1,349,000 (¢3,710,000) will be financed almost entirely from local resources, while the purchase and installation of equipment estimated at $833,000 will be financed almost entirely from external sources.

	Buildings, access roads, etc.	Equipment
Local	$1,305,400(¢3,590,000)	$ 15,000 (¢40,000)
External	43,600	818,000
Total	$1,349,000	$833,000
Grand total	$2,182,000	

Project No. TEP-18-006

GHANA: NEW TELECOMMUNICATIONS ENGINEERING SCHOOL AT ADENTAN

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority National project with subregional implications

Nature: Construction of a training centre, including supply of training equipment

Location: Adentan in the Greater Accra region

Cost: $31.34 million

External financing required: $1 million

Duration: Five years

Desirable starting date: January 1984

Project initiator: Ministry of Transport and Communications

Project management authority Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The first aim of the project is to provide vocational training for skilled labourers, apprentices and technical staff, on existing lines. Further objectives are to provide:

- Post-qualification training for engineers;
- Facilities for other organizations, such as civil aviation, information services and the Water and Sewerage Corporation, whose staff require training in telecommunications;
- Facilities for other countries in the subregion;
- Small laboratories for research.

The training level will be raised to meet the demands of modern telecommunications technology.

2. Nature and constituent parts

The project includes:

(a) Construction of the following buildings:

- Administration block;
- Teaching block;
- Students hostel;
- Dining hall and kitchen;
- Multipurpose hall;
- Clinic;
- Guest house;
- Senior staff bungalows;
- Junior teaching staff block;
- Junior staff block;

(b) Supply and installation of the following equipment:

- External plant
- Power ventilation;
- Training aids and equipment.

III. Justification; economic analysis

1. Context and benefits

As long ago as 1967 the need was appreciated to expand the existing Telecommunications Engineering School. Unfortunately, a new school could not be built on the existing site, because of:

- The inadequacy of existing facilities;
- The limitations of the present site, where sufficient accommodation for classrooms, laboratories, workshops and housing for students and staff could not be provided;
- The lack of an environment appropriate for locating a school;
- The discovery that the site was within an earthquake belt.

The rapid developments in the design and operation of telecommunication equipment have created an urgent need for corresponding developments and improvements in training methods. Consequently, a new modern school is needed, capable of training at all levels to match the developments in telecommunications. A more suitable environment for training and improved training facilities will create staff who can maintain equipment more efficiently. This will extend the life of the equipment and less faults will occur. With better maintenance there will be increase in revenue.

2. Cost

The cost of the project is estimated at $31,336,000, almost entirely financed from local resources. External finance be used mainly for the purchase of training aids and equipment.

Local	$30,336,000
External	$ 1,000,000
Total	$31,336,000

Project No. TEP-18-007

GHANA: ACCRA-BOLOGATAN MICROWAVE LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Supply and installation of equipment

Location: Several national locations

Cost: $28.41 million

External financing required: $26 million

Duration: Three years. Completion 1986

Desirable starting date: Project in progress

Project initiator: Ministry of Transport and Communications

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The purpose of the project is to provide high-quality transmission between Accra and four regional capitals, as part of the Pan-African Telecommunications Network (PANAFTEL), together with spur transmission links and their related facilities, to install a television broadcasting transmitter at Bolgatanga, the most northern regional capital; and to provide television programme distribution from Accra to all four regional capitals.

2. Nature and constituent parts

The project consists of the supply and installation of the following three equipment systems:

(a) Microwave 960-channel radio system:

(i) Accra-Koforidua-Kumasi link; forward link (2+1) and reverse link (2+1);

(ii) Kumasi-Tamale-Bolgatanga link: forward link (2+1) plus occasional television programme transmission. Associated drop insert and multiplex facilites are provided along the route, as well as direct circuits between Accra and Ouagadougou in the Upper Volta;

(b) UHF radio system: UHF radio relay links, including multiplex equipment, towers, antennae and power supply equipment for transmission between the following locations:

Tamale-Bole East	120 channels
Bole East-Wa	60 channels
Kukruku-Enchi	60 channels
Koforidua-Nsawam	60 channels
Koforidua-Mampong	60 channels
Swedru-Winneba	60 channels
Sunyani-Dormaa Ahenkro	120 channels
Mpraeso-Odonkawkrom	24 channels
Amedzofe-Ketekrachi	24 channels
Mpraeso Town-Mpraeso	24 channels

(c) TV broadcasting system:

(i) TV transmitter at Bolgatan

(ii) ST links at Tamale and Bolgatan

III. Justification; economic analysis

1. Context and benefits

The project is an important element of PANAFTEL, greatly improving telecommunication within Ghana and providing direct telephone circuits between Accra and Ouagadougou in the Upper Volta. The project will thus assist in upgrading economic activity. When the more extensive television coverage is also brought into consideration, it may be seen that the project will contribute in no small measure to the tone of social development in the nation as a whole.

2. Cost

The local component is estimated at the equivalent of $2.41 million, financed by the Ghana Government. External financing, estimated at $26 million, is being provided by a Japanese loan. The total cost would therefore amount to $28.41 million.

Project No. TEP-19-001

GUINEA: ESTABLISHMENT OF AN INTERNATIONAL TELEPHONE TRANSIT CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications for a disadvantaged countries

Nature: Construction of a technical building

Location: Conakry

Cost: $4 million

External financing required: $3.2 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The purpose of the project is to construct a technical building of four stories, together with essential services, to accommodate equipment already available at the existing national/international telephone transit centre.

2. Nature and constituent parts

The project included the following:

(a) Elaboration of technical plans;
(b) Construction works;
(c) Installation of:

- Stand-by power plant;
- Lighting equipment;
- Water supply system;
- Air conditioning equipment;
- Security devices;
- Office equipment.

III. Justification; economic analysis

1. Context and benefits

Accommodation is needed for the equipment of the MP 20 telephone exchange. The benefits are those arising from the entry into operation of this exchange.

2. Cost

The total cost of the project is estimated at $4 million, 20 per cent of which will be financed locally.

Project No. TEP-19-003

GUINEA; EXTENSION OF THE CONAKRY AND KANKAN CABLE NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Procurement of stores, installation of cable network

Location: Conakry and Kankan

Cost: $10.00 million

External financing required: $5.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose of the project is to expand the local cable networks in Conakry and its suburbs in order to match traffic growth in an area where the population is increasing at the rate of 4 per cent per annum.

2. Nature and constituent parts

- A feasibility study for the rehabilitation and extension of the existing cable network;
- Procurement and installation of cables and associated connection and distribution equipment.

III. Justification: economic analysis

1. Context and benefits

The development and daily growth of Conakry suburbs calls for a review of the configuration and size of the local cable network in order to satisfy present and future demand for telephone and telex traffic in the area. The project will result in an improvement of telephone service quality, absorb all the traffic generated by the proliferation of the suburban areas, contribute to relieving the population concentration in the capital itself and increase the profitability of the lines.

2. Cost

The total cost of the project is estimated at $10.00 million, half of which would be financed externally.

Project No. TEP-19-004

GUINEA: TELEPHONE EXCHANGES FOR 26 TOWNS: PHASE I

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature : Construction work; supply and installation of equipment; and training of personnel

Location: Covers 14 towns (in phase I) in various parts of the country

Cost : $52 million

External financing required: $41.6 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose of the project is to meet pressing demand for service, through the introduction of automatic dialling.

2. Nature and constituent parts

- Supply and installation of 14 exchanges;
- Construction of shelters;
- Supply and installation of local cable networks;
- Supply of spare parts and maintenance equipment;
- Training of personnel for operations and maintenance.

III. Justification; economic analysis

1. Context and benefits

The project will replace 14 obsolete manual exchanges by automatic dialling facilities in 14 main urban centres. Automatic service has become a necessity to deal with the numerous pending requests for connection in the towns concerned and in view of the important farming and mining activities in the areas concerned.

2. Cost

The total cost of the project is estimated at $52 million, 20 per cent of which is expected to be financed locally.

Project No. TEP-19-005

GUINEA: MAINTENANCE OF TELECOMMUNICATIONS NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Technical assistance; supply and installation of equipment; and training of personnel

Location: Conakry

Cost: $5 million

External financing required: $4 million

Duration: Four years

Desirable starting date: 1985

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The objective of the project is to maintain all telecommunications equipment, test equipment and infrastructure in perfect operational state, with the aim of prolonging their useful life and improving service quality.

2. Nature and constituent parts

Phase I of the project will comprise:

- Drawing-up a maintenance improvement plan;
- Finalizing a feasibility study in the context of the maintenance improvement plan;
- Supply and installation of equipment and infrastructure for the establishment of a training workshop;

Phase II will comprise:

- Training of personnel;
- Establishment of maintenance centres and construction of a prototype store for materials and spare parts.

III. Justification; economic analysis

1. Context and benefits

Since independence Guinea has invested several million dollars in the telecommunications sector for the purpose of improving services. In order to ensure survival of equipment, better quality of service and a good financial return, it is indispensable to provide good and steady maintenance. The skills and know-how which nationals will acquire through this project will result in a marked improvement in service quality and produce a long-term return on the microwave switching and broadcasting equipment installed.

2. Cost

The following cost estimates are available :	Million dollars
Maintenance plan	0.1
Feasibility study	0.5
Supply and installation of equipment	3.3
Training	0.5
Maintenance centres and store	0.6
Total	5.0
External financing	4.0

Project No. TEP-19-007

GUINEA: RURAL TELECOMMUNICATIONS NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Feasibility study; and procurement and installation of equipment

Location: Agro-pastoral areas

Cost: $10 million

External financing required: $8 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The project aims at establishing telecommunications facilities for servicing the districts, the mining and agro-pastoral areas and the PRL of the villages.

2. Nature and constituent parts

- Feasibility study (Phase I);
- Supply and installation of equipment (Phase II).

III. Justification: economic analysis

1. Context and benefits

The main transmission routes of the Pan-African Telecommunications Network (PANAFTEL) only serve the large towns of the country. This project will link the isolated rural areas with urban telephone exchanges and thus the PANAFTEL backbones. It will facilitate the opening up of rural areas, contributing to economic development and raising the living standard of the peasants.

2. Cost

The total cost is estimated at $10 million, 20 per cent of which is expected to be financed locally.

Project No. TEP-19-008

GUINEA: REPLACEMENT OF MARITIME RADIO COMMUNICATION FACILITIES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project, with subregional implications for a disadvantaged country

Nature: Feasibility study, supply and installation of equipment; and training of personnel

Location: Conakry

Cost: $3.00 million

External financing required: $2.40 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

To provide the country with modern maritime radio communication facilities.

2. Nature and constituent parts

- Upgrading of existing feasibility study;
- Supply and installation of modern equipment for Conakry coast station;
- Training of personnel for operations and maintenance.

III. Justification: economic analysis

1. Context and benefits

Taking into account the extension of Conakry harbour, the main port of the country, and the obsolete state of port facilities, the modernization of coast station telecommunication facilities has become imperative. The benefits of the project would include a cut in maritime freight costs on the West African coast, which are excessive, and increased safety of human life at sea.

2. Cost

Total cost is estimated at $3 million, of which 20 per cent is expected to be financed locally.

Project No. TEP-19-009

GUINEA: EXTENSION OF STANDARD B EARTH STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications for a disadvantaged country

Nature: Supply and installation of equipment

Location: Wonkifong (Coyah city)

Cost: $2 million

External financing required: $1.6 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Supplier/Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose of the project is to extend the circuit capacity of the existing INTELSAT standard B earth station.

2. Nature and constituent parts

The project includes:

- Supply and installation of single-carrier-per-channel (SCPC) equipment;
- Supply and installation of a power supply system;
- Renewal of station earth.

III. Justification; economic analysis

1. Context and benefits

The commissioning of the INTELSAT earth station in May 1980 led to a considerable improvement in service quality and a heavy increase in international telecommunications traffic. The station's 24 SCPC circuits soon became saturated. A first-phase extension from 24 to 48 circuits is indispensable. The diesel-driven alternators, originally provided as stand-by equipment, became permanent sources cf electricity on account of the poor quality of the mains supply. It should also be noted that operational breakdowns are on record due to insufficient grounding of the station.

The limited number of international circuits, the permanent operation of the stand-by alternators and the poor earth connection hinder trade and freeze the return on investment in the station.

2. Cost

Total cost is estimated at $2 million, of which 20 per cent is expected to be financed locally.

Project No. TEP-19-010

GUINEA: HF RADIO COMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Feasibility study; supply and installation of equipment; and training of personnel

Location: Conakry and other urban centres throughout the country

Cost: $3.2 million

External financing required: $2.56 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose of the project is to replace obsolete, non-operational radio communication links between the capital and the other main urban centres, which are in effect isolated from the capital. The new links will foster the opening up of those centres and reinforce the microwave telecommunication facilities.

2. Nature and constituent parts

- Up-dating of the existing feasibility study;
- Supply and installation of HF radio communications equipment;
- Training of personnel.

III. Justification; economic analysis

1. Context and benefits

The existing HF links are obsolete and out of operation, which has resulted in the interruption of communications between Conakry and towns in the interior of the country.

The following benefits of the project should be mentioned:

- Fast opening-up of the provinces, the isolated towns and districts;
- Securing national and PANAFTEL microwave backbones;
- Availability of telecommunication facilities for national security and meteorological services and for small and medium-size enterprises located in the provinces of the country.

2. Cost

Total cost is estimated at $3.2 million, of which 20 per cent is expected to be locally financed.

Project No. TEP-22-001

KENYA: RURAL TELECOMMUNICATIONS PROJECT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Provision of modern telecommunication facilities in rural areas; and staff training

Location: Rural areas generally

Cost: $5.9 million

External financing required: $5.15 million

Duration: Four years

Desirable starting date: 1984

Project initiator: International Telecommunication Union and Kenya Posts and Telecommunications Corporation, jointly

Project management authority: Kenya Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The project aims to provide modern telecommunications facilities to 299 rural centres where no telephones exist at present.

2. Nature and constituent parts

The main parts of the project are:

- Devising a medium-term plan for the development of the national rural telecommunications network;
- Preparing a feasibility study for the establishment of networks for 299 rural centres;
- Establishing the network;
- Training of personnel for operation and maintenance of telecommunication facilities.

III. Justification; economic analysis

1. Context and benefits

The project will provide rural areas with telecommunications for administration, marketing and social purposes, previously non-existent, thus promoting development in those areas.

2. Cost

The estimated cost is $5,898,000 of which $5,153,000 is sought as external assistance to meet foreign currency expenses.

The budget estimate is:	In million $
Technical assistance and equipment	4,953
Building	745
Training	200
Total	5,898

Project No. TEP-24-001

LIBERIA: TELECOMMUNICATIONS EXPANSION - STANDARD A EARTH STATION (INTELSAT A)

I. Identification and summary

Origin of project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Engineering survey, supply and installation of equipment; and staff training

Location: Monrovia

Cost: $15 million

External financing required: $15 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Liberia Telecommunications Corporation

II. Description

1. Aim and objective

The purpose of the project is to initiate telecommunication by satellite from Monrovia in order to increase the international traffic both within and outside the region.

2. Nature and constituent parts

The project comprises the following:

(a) Engineering surveys;

(b) Supply and installation of following equipment:

- An INTELSAT standard A earth station
- A microwave link between that station and the international exchange
- Standby power units

(c) Training of staff

III. Justification; economic analysis

1. Context and benefits

The project will improve international communications for Liberia and provide outlet channels for intercontinental communications between members and countries outside the region. It will eliminate the present extreme congestion and enhance the efficiency of regional and international communication of the Economic Community of West African States.

2. Cost

The cost of the project is estimated at $15 million, to be financed wholly from external sources.

Project No. TEP-24-002

LIBERIA: RURAL TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Survey; supply and installation of equipment; and training staff

Location: At various places throughout the country

Cost: $3.3 million

External financing required: $3.3 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Liberia Telecommunications Corporation

II. Description

1. Aim and objective

The objective is to establish an automatic rural telecommunications system by radio channel for the nine countries of Liberia, integrated with the postal facilities in areas where buildings are required for the project.

2. Nature and constituent parts

- Engineering surveys;
- Procurement and installation of radio telephone equipment at 37 rural locations;

- Training of maintenance staff.

The project involves the establishment of two operational systems, in that it will permit single-channel (point-to-point) and multi-access connections by rural subscribers.

III. Justification; economic analysis

1. Context and benefits

Liberia, like all developing countries, is faced with problem of an inadequate communications system, particularly within the rural areas of the country, where over 70 per cent of the population live. To facilitate national development, there must be an efficient integrated telecommunications system linking the rural and urban populations. The project will contribute to the equitable distribution of economic benefits and the diffusion of social and economic activities throughout the country.

2. Cost

The cost of the project is estimated at $3.3 million, to be financed wholly from external sources.

Project No. TEP-24-003

LIBERIA: PROVISION OF COASTAL COMMUNICATION STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Maritime Communications

Order of priority: National project

Nature: Supply and installation of equipment; and staff training

Location: Paynesville, Monrovia

Cost: $1.83 million

External financing required: $1.83 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The aim of the project is to provide immediate relief from continuous embarrassment to Libeira, by establishing the necessary services for use by the many Liberian registered and other ocean-going ships, as well as fishing boats, etc., plying the coast of Liberia.

2. Nature and constituent parts

(a) Supply and installation of the following equipment for MF/HF/VHF transmitting and receiving stations, the whole complying with maritime regulations:

- One 2KW MF unit;
- One 2kW HF unit and one 5kW HF unit;
- An ARQ protected communication system to ensure error-free operations;
- VHF reverse duplex equipment and a five-channel scanning receiver;
- Test equipment;
- Stand-by generator;
- Spare parts provisioning for two years;

(b) Training for up to 8 persons for 18 weeks - to include training with the manufacturers and on-the-job training.

III. Justification; economic analysis

1. Context and benefits

Liberia, a major maritime country is in urgent need of a maritime coastal communication station to cope with the demand for shore-to-ship; communication and comply with safety at sea regulations.

2. Cost

The cost of the project is estimated at $1.83 million, to be financed wholly from external sources. The breakdown is shown in the following table (in thousand dollars):

	1st year	2nd year	Total
Transmitter station, equipment and antennas	600	300	900
Receiver, equipment and antennas	400	200	600
Training	20	10	30
Spares	150	50	200
Test equipment	80	20	100
Total	1250	580	1830

Project No. TEP-24-004

LIBERIA: TELECOMMUNICATIONS EXPANSION - SATELLITE EARTH STATION (INMARSAT) FOR MARITIME COMMUNICATIONS

I. Identification and summary

Origin of project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction work; supply and installation of equipment; and staff training

Location: Monrovia

Cost: $8 million

External financing required: $ 8 million

Duration: Three years

Desirbale starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Liberia Telecommunications Corporation

II. Description

1. Aim and objective

The objective of the project is to provide effective communication to vessels at sea, with a view to enhancing safety and rescue operations.

2. Nature and constituent parts

(a) Construction: associated civil works;
(b) Supply and installation of the following equipment at Monrovia:
  - Satellite earth station INMARSAT;
  - Stand-by power generator;

(c) Training of staff.

III. Justification; economic analysis

1. Context and benefits

The project will increase the efficiency of safety and rescue operations at sea. It will also provide communication facilities to the large number of vessels registered with the Liberian maritime fleet.

2. Cost

The cost of the project is estimated at $8 million, to be financed wholly from external sources.

Project No. TEP-27-001

MALAWI: NATIONAL BACKBONE TRUNK NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of equipment

Location: Blantyre, Lilongwe, Mzuzu, Karonga, Thyolo, Zomba

Cost: $4.9 million

External financing required: $4.9 million

Duration:ofFour years

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The objective is to improve the quantity and quality of services on the national backbone trunk network.

2. Nature and constituent parts

The project consists in the supply and installation of equipment as follows:

- To replace the existing transmission system on the Blantyre-Lilongwe route by a new high-capacity microwave system;
- To upgrade the Blantyre-Zomba and Lilongwe-Mzuzu microwave routes;
- To establish new Blantyre-Thyolo and Mzuzu-Kakonga microwave routes;
- Installing new trunk exchanges and manual boards.

III. Justification; economic analysis

1. Context and benefits

The existing national backbone network consists of the following microwave radio routes:

- Blantyre-Lilongwe,	960 channels capacity
- Blantyre-Zomba,	600 channels capacity
- Lilongwe-Mzuzu,	300 channels capacity

Already in 1980 the Blantyre-Lilongwe system, then 15 years old, could no longer fulfil the noise requirements. The number of installed circuits on the Blantyre-Zomba and Lilongwe-Mzuzu routes cannot meet the traffic requirements. It is therefore necessary to modernize the existing backbone network and to extend it by constructing the Mzuzu-Karonga and Blantyre-Thyolo routes. These requirements were pointed out in the Pan-African Telecommunications Network project RAF/73/076 and the National Telecommunications Development Plan, both prepared by the International Telecommunication Union.

This backbone project covers the three geographical regions of Malawi, the northern, central and southern. Its implementation will permit more rapid development of telecommunications in the whole country.

2. Cost

The total cost of project is estimated at $4.9 million, to be financed wholly from external sources.

Project No. TEP-27-002

MALAWI: URBAN NETWORKS FOR BLANTYRE AND LILONGWE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction, supply and installation of equipment, and training staff

Location: Blantyre and Lilongwe

Cost: $26.5 million

External financing required: $25.6 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

To meet the demand for telephones and to improve the quality of service in the two main cities in the country.

2. Nature and constituent parts

(a) Construction of extension buildings;
(b) Supply and installation of equipment as follows:

- Extensions to the urban exchanges at Blantyre and Lilongwe to meet immediate demand;
- New digital exchanges at Blantyre (1985) and Lilongwe (1988);
- Cables to extend the network to cope with future growth; and cables to accommodate digital technology;
- Training of staff.

III. Justification; economic analysis

1. Context and benefits

The Malawi plan for telecommunications development, prepared with assistance from the International Telecommunication Union and UNDP, makes provision for:

- 11,300 subscribers at Blantyre and 7,300 at Lilongwe in 1985, i.e. 7,700 and 5,200 more subscribers, respectively;
- 15,000 subscribers at Blantyre and 11,000 at Lilongwe, in total, by 1988; and
- 24,000 subscribers at Blantyre and 21,000 at Lilongwe, in total, by 1993.

The Blantyre telephone exchange, which had already run more than half its useful life a long time ago, will not be able to meet demand during the years ahead. The plan therefore provides for early expansion and replacement in 1985 by a more modern exchange. Similar comment applies to the exchange at Lilongwe, which is expected to be replaced in 1988.

The extension programme as part of a coherent plan, will improve the quality of service meanwhile.

The project will prepare the way for simplification of the network, expected to begin in 1990, with standardization of equipment and further digitization.

2. Cost

The total cost is estimated at $26.5 million, of which $900,000 would be for buildings, to be financed from local sources.

Project No. TEP-27-003

MALAWI: EXTENSION OF URBAN NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of equipment

Location: Zomba and Mzuzu

Cost: $1.12 million

External financing required: $1.12 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective of the project is to meet demand in the Zomba and Mzuzu areas.

2. Nature and constituent parts

Supply and installation of additional telephone exchange equipment and urban cables; and purchase of the telephone sets needed to extend services to new subscribers, as provided for in the plan. The construction of a building will not be necessary.

III. Justification; economic analysis

1. Context and benefits

For the five-year period 1983-1988, the development plan called, for about 500 additional lines at Zomba and 650 at Mzuzu. The local networks of the two towns will have to be expanded along with the telephone exchanges.

Zomba and Mzuzu are primary centres in the routeing plan of the national transmission network, located at its extreme ends.

2. Cost

The total cost of the project is estimated at $1.12 million, to b financed wholly from external sources.

Project No. TEP-27-004

MALAWI: TELEGRAPH AND TELEX EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction, supply and installation of equipment; and training of staff

Location: Throughout the country

Cost: $12 million

External financing required: $11.9 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective of the project is to meet demand for telegraph and telex services.

2. Nature and constituent parts

(a) Construction of buildings and extension to buildings;
(b) Supply and installation of equipment as follows:

- Additional telegraph and telex circuits for existing transmission routes and new routes provided for in the Telecommunications Development plan;
- One new telex exchange and extensions to the existing exchange;
- Teleprinters to connect new subscribers to the network;

(c) Training of staff.

III. Justification; economic analysis

1. Context and benefits

The telecommunications development plan makes provision for a major increase in the number of telex subscribers connected to the Blantyre exchange through the national transmission network. It is necessary, therefore, to install telegraphic multiplex equipment in the transmission network to acquire teleprinters and to install the lines needed to bring service to new subscribers.

More intensive use of the transmission network and of communication equipment requires the addition of a new, automatic telex exchange to the existing facilities.

2. Cost

The cost is estimated at $12 million, of which $100,000 is required for construction of buildings, to be financed from local sources.

Project No. TEP-27-005

MALAWI: DEVELOPMENT OF SMALL TELEPHONE NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction; supply and installation of equipment; and training of staff

Location: Various centres throughout the country

Cost: $14 million

External financing required: $12.9 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective of the project is to meet the growing demand for telephone service and to improve the quality of service.

2. Nature and constituent parts

(a) Construction of new telephone exchanges and, where needed, of extensions to existing exchanges;

(b) Supply and installation of equipment for:

- Expansion of existing local telephone exchanges and their networks;
- Establishment of new digital local exchanges, from 1986;
- Addition of new digital automatic exchanges at existing local exchanges, from 1986, and expansion of their networks, to cope with future growth in demand;

(c) Training of staff.

III. Justification; economic analysis

1. Context and benefits

For the five-year period 1983-1988, the development plan estimates that some 7,500 subscribers will need to be connected to small local networks, either existing or to be created. Standardization of equipment will be initiated through the use from 1986 of digital automatic exchanges in all new networks.

2. Cost

The cost is estimated at $14 million, of which $1.1 million for buildings, to be met from local resources.

Project No. TEP-27-006

MALAWI: DEVELOPMENT OF RURAL TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of 65 public call boxes in rural areas

Location: Various, throughout the country

Cost: $1.09 million

External financing required: $1.09 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective of this project is to contribute towards a fuller participation in national activity through improved telecommunications.

2. Nature and constituent parts

Essentially, the erection of 65 public call boxes in disadvantaged rural areas, using appropriate technology (wire or radio transmission systems). There will be no need to construct buildings or to undertake any civil engineering works.

III. Justification; economic analysis

1. Context and benefits

Because of their inaccessibility, some rural areas find it difficult to participate in national activity related to social and economic development. The Government attaches priority to giving them some appropriate means of communication, by locating public call boxes in convenient places.

2. Cost

The cost is estimated at $1.09 million, to be financed wholly from external sources.

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Project No. TEP-29-001

MAURITANIA: TELECOMMUNICATIONS DEVELOPMENT PROGRAMME: PHASE I

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Composite project: construction and equipment of broadcasting stations and telephone exchanges

Location: Throughout the country

Cost: $4 $:24 millio$24 million

External financing required: $24 million

Duration: Five years

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The aim of the project is to develop the telecommunications network of the country.

2. Nature and constituent parts

The project consists of constructing and equipping telephone exchanges, broadcasting stations, etc.

III. Justification; economic analysis

1. Context and benefits

The telecommunications network of the country is limited to a few urban areas. The whole programme constitutes a massive undertaking to extend telecommunication facilities throughout the country. The project is divided into two parts, covering the northern and southern areas of the country, and would be implemented in several phases, of which only the first phase is described here.

2. Cost

Northern subproject	In million $
Phase I	15
Phase II	11
Southern subproject	
Phase I	9
Phase II	9.5
Phase III	10

For the northern subproject's phase I, estimated to cost $15 million, financing to the extent of 60 million French francs has been obtained from the French Government. Including the southern subproject, phase I is estimated to cost $24 million, to be financed wholly from external sources.

Project No. TEP-30-003

MAURITIUS: TELECOMMUNICATIONS TRAINING CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction of buildings; provision of experts; and supply and installation of equipment

Location: To be decided

Cost: $0.8 million

External financing required: $0.8 million

Duration: Two years and a half

Desirable starting date: 1984

Project initiator: Telecommunications Department

Project management authority: Telecommunications Department

II. Description

1. Aim and objective

The objective of the project is to expand and improve the quality of the facilities for training lower- and middle-level categories of staff, broadening the scope of training in order to reduce dependence on expensive overseas training.

2. Nature and constituent parts

The project consists of the construction of buildings to house new modern training units, together with general workshops, general service stores and administration block. The technical units comprise classrooms and laboratories; they will contain test and demonstration equipment, as well as other aids for teaching and training. Separate units are envisaged for switching, radio transmission, subscribers apparatus and outside plant.

III. Justification; economic analysis

1. Context and benefits

Formal training for lower- and medium-level technical staff started in 1976. Accommodation of approximately 2,600 square feet was provided near and at the Rose Hill telephone exchange. Training requirements have since increased, as the result of the rapid development and expansion of the network, making it imperative to construct and equip a new training centre to provide for current training needs and anticipated requirements for the next decade.

2. Cost

The cost of the project is estimated at $800,000, made up as follows:

	Thousand dollars
Building (10,000 sq. ft), infrastructure and services	275
Equipment, furniture, etc.	125
Experts	350
Fellowships	50
Total	800

The entire cost would be financed from external sources.

Project No. TEP-31-001

MOROCCO: ESTABLISHMENT OF FIVE COASTAL STATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction; and supply and installation of equipment

Location: Dakhla, Lahoune, Mdiq-Mehdia, Nador and Tarfaya

Cost: $3 million

External financing required: $1.9 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective is to provide ship-to-shore communications, in the interests of maritime commerce.

2. Nature and constituent parts

Construction of five buildings; supply and installation of five sets of radio transmitting and receiving equipment, each with associated items of equipment. The stations are to be located at Dakhla, Lahoune, Mdiq-Mehdia, Nador and Tarfaya.

III. Justification; economic analysis

1. Context and benefits

Morocco has a long coastline along the Mediterranean Sea and the Atlantic Ocean. The development of trade and shipping safety both require these five stations for ship-to-shore communications to be established.

2. Cost

The cost of this project is estimated at $3 million, of which $1.1 million, for construction of station buildings, would be met from local resources.

Project No. TEP-31-002

MOROCCO: INSTALLATION OF RURAL TRANSMISSION NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of equipment

Location: Thirty-six rural areas in various parts of the country

Cost: $25 million

External financing required: $25 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The objective of the project is to make available telecommunication facilities in rural areas of the country.

2. Nature and constituent parts

Supply and installation of radio relay, coaxial cable and multiplex transmission equipment to link 36 rural areas to the national telecommunications network.

III. Justification; economic analysis

1. Context and benefits

In the current five-year development plan (1981-1985), the penetration of the telecommunications services into the rural areas is one of the priorities. The project will connect 36 rural areas to the existing network, thereby contributing to the socio-economic development of the country.

2. Cost

The cost is estimated at $25 million, to be financed wholly from external sources.

Project No. TEP-31-003

MOROCCO: INSTALLATION OF RURAL TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction of buildings, specification, kpurchase and installation of equipment

Location: In 44 rural locations throughout the country

Cost : $15.2 million

External financing required: $15.2 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administratic

II. Description

1. Aim and objective

The aim of the project is to establish telephone exchanges in the rural parts of the country.

2. Nature and constituent parts

- Construct exchange buildings;
- Specify, purchase and install exchange equipment.

III. Justification; economic analysis

1. Context and benefits

In the current five-year development plan (1981-1985), the penetration of the local telecommunication services into the rural areas is one of the priorities. The project will extend service to 44 new rural areas, thereby contributing to a balanced socio-economic development of the country.

2. Cost

The cost is estimated at $15.2 million, to be financed wholly from external sources.

Project No. TEP-33-001

NIGER : INSTALLATION OF MICROWAVE LINKS BETWEEN AGADEZ AND TWO REGIONAL CAPITALS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Feasibility and engineering studies; construction work; supply and installation of equipment and training of personnel

Location: Agadez, Tahoua and Zinder

Cost: $3.66 million

External financing required: $3.66 million

Duration: One and a half years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The aim of the project is to improve communications between Agadez, Tahoua and Zinder and to break down the communications isolation of a number of rural communities in the region.

2. Nature and constituent parts

The project consists of two parts: a study to establish detailed technical specifications, and the construction of the link. Construction work will involve the supply and installation of 960-channel wide-band microwave equipment for a link with a configuration of two plus one in the forward direction and one plus one in the reverse direction. Local personnel are to be trained to maintain and operate the equipment.

III. Justification; economic analysis

1. Context and benefits

The backbone of the interurban telecommunications of the Niger consists of a 600-channel microwave link which runs from the capital in the south-west part of the country to the east along the Nigerian border, passing through the important town of Zinder. A low-capacity spur connects Tahoua to the backbone at Birni Nkonni. The present network configuration requires communications between Tahoua and Agadez, as well as between Zinder and Agadez, to be routed a long distance via the backbone to Diffa or Niamey, whence they are connected via satellite to Agadez.

Agadez, the second city of the Niger and an important mining centre, increasingly depends on the agricultural centres of Tahoua and Zinder for the supply of livestock and agricultural produce. The present routing will become saturated very shortly. Since the earth stations at Niamey, Agadez and Diffa have a maximum capacity of 60 channels, the new links will transform the communications network between the three regional capitals into a mesh network. Moreover they will permit the Posts and Telecommunications Office to serve the rural communities which lie along the trajectory of the links. It must be emphasized here that the opening up of the rural areas is one of the major objectives of the current national development plan.

The establishment of good communications between Agadez, Tahoua and Zinder will promote trade in agricultural produce and will act as an instrument for efficient administration and management in the areas concerned.

2. Cost

The cost is estimated at $3.655 million made up as follows:

	In million $
Feasibility studies and detailed engineering of links equipment:	0,205
Purchase of equipment:	
- radio	0,616
- towers	0,672
- antennae and fixtures	0,320
- power generation	0,420
- multiplex	0,120
Shipping and delivery of equipment	0,205
Installation of equipment	0,430
Buildings and site preparation	0,560
Training of personnel	0,107
Total	3,655

The entire cost would be financed from external sources.

Project No. TEP-34-001

NIGERIA: LAGOS-PORT HARCOURT SUBMARINE CABLE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Purchase and installation of equipment

Location: Eastern area of Nigeria

Cost: $15.2 million

External financing required: None

Duration: Three years

Desirable starting date: 1984

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

II. Description

1. Aim and objective

To extend the Europe-West Africa submarine cable from Lagos to Port Harcourt.

2. Nature and constituent parts

The project consists of the following parts:

- A study to draw up the detailed engineering specifications for the link;
- Supply and laying of submarine cable and its associated repeaters;
- Construction and equipping of cable landing station.

III. Justification; economic analysis

1. Context and benefits

The Europe-West Africa submarine cable terminates at Lagos. Its full potential has not been realized in the eastern part of the country because of inadequate circuits. The extension of the submarine cable to Port Harcourt will provide additional international circuit capacity to the city and surrounding regions. it will also diversify the international transmission routes of the country, thus increasing over-all reliability.

2. Cost

The estimated cost of the project is $15.2 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-002

NIGERIA: INSTALLATION OF ENUGU SATELLITE EARTH STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction work; purchase and installation of equipment; and training of personnel

Location: Enugu (Anambara State)

Cost: $24.32 million

External financing required: None

Duration: Three years

Desirable starting date: 1984

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

II. Description

1. Aim and objective

The purpose is to establish a gateway centre for international telecommunications.

2. Nature and constituent parts

The project consists of the following constituent parts:

- A study to draw up detailed engineering specifications;
- Construction work;
- Supply and installation of equipment for a satellite earth station and international telephone and telex exchanges;
- Training of personnel to operate and maintain the equipment.

III. Justification; economic analysis

1. Context and benefits

Lagos is the main international telecommunications gateway of Nigeria. Because of the size of the country and the long distances between points of high concentration of international traffic, the facilities provided by the Lagos international gateway centre have proved to be inadequate. There is an urgent need to construct more, strategically situated, international gateway centres. The proposed centre at Enugu will serve the eastern part of the country and should lead to considerable improvements in international communications to and from that region.

2. Cost

The project is estimated to cost $24.32 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-003

NIGERIA: THIRD SATELLITE EARTH STATION - REPLACEMENT OF LANLATE I

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Supply and installation of equipment

Location: Lanlate

Cost: $1 million

External financing required: None

Duration: Unknown

Desirable starting date: Unknown

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

Project No. TEP-34-004

NIGERIA: (INMARSAT) EARTH STATIONS FOR MARITIME COMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction work; supply and installation of equipment; and training of personnel

Location: Lagos and Port Harcourt

Cost: $1.23 million

External financing required: None

Duration: Three years

Desirable starting date: 1984

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

II. Description

1. Aim and objective

The aim of the project is to improve maritime telecommunications along the coast of Nigeria.

2. Nature and constituent parts

The project involves construction work and supply and installation of equipment for INMARSAT earth stations at Lagos and Port Harcourt; and the training of personnel to maintain, operate and manage the stations.

III. Justification; economic analysis

1. Context and benefits

The introduction of the INMARSAT satellite system for ship-to-shore communications has revolutionized maritime commerce. Shipowners are equipping their boats with terminals for the system and it is incumbent on operators of ship-to-shore communication facilities to provide the corresponding land-based terminals to maintain contact with ships so equipped. The two INMARSAT earth stations will meet the increasing demand for this new facility. The project has been formulated in the contexts of the World Communications Year and the National Development Plan.

2. Cost

The estimated cost of the project is $1.23 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-005

NIGERIA: INTERNATIONAL TELEX EXCHANGE AT ENUGU

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Supply and installation of telex exchange equipment

Location: Enugu

Cost: $6.40 million

External financing required: None

Duration:

Desirable starting date:

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

Project No. TEP-34-006

NIGERIA: ABUJA INTERNATIONAL SWITCHING CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Supply and installation of equipment

Location: Abuja

Cost: $9.6 million

External financing required: None

Duration:

Desirable starting date:

Project initiator: Nigerian External Telecommunications

Project management authority: Nigerian External Telecommunications

Project No. TEP-34-007

NIGERIA: INSTALLATION OF TELEPHONE EXCHANGE SWITCHING EQUIPMENT AT 201 LOCATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Planning studies; supply and installation of equipment; and training of personnel

Location: All parts of Nigeria - at 201 points

Cost: $259.2 million

External financing required: None

Duration: Five years

Desirable starting date: 1985

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The aim of the project is to improve telephone communications throughout the country.

2. Nature and constituent parts

The project consists of: planning studies; the supply and installation of equipment for 201 new telephone exchanges and the extension of 12 existing ones; and the training of officers to operate and maintain the exchanges.

III. Justification; economic analysis

1. Context and benefits

The demand for telephone service in various parts of the country has increased considerably. The existing network, consisting of some automatic exchanges and numerous manual exchanges, is unable to cope with the demand for services. At the end of 1981 there were 104,000 applicants on the waiting list as compared to under 115,000 working exchange lines. It is believed that the size of the waiting list seriously understated the position: applicants had more or less given up the idea of placing their names on the waiting list. The demand for efficient and reliable telephone services has been fuelled by the vigorous and bustling economy of the country. The project is intended to satisfy increasing demand by providing an additional 263,550 lines at key locations throughout the country.

2. Cost

The estimated cost of the project is $259.2 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-008

NIGERIA: EXTERNAL LINE PLANT INSTALLATIONS IN 223 LOCATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Purchase and installation of outside plant

Location: All parts of Nigeria - in 223 areas

Cost: $775.85 million

External financing required: None

Duration: Five years

Desirable starting date: 1985

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The aim of the project is to eliminate the bottle-neck to the extension of telephone services by extending the cable networks of the areas served by telephone exchanges.

2. Nature and constituent parts

The project consists of the supply and installation of 136,000 primary cable pairs and 272,000 secondary cable pairs; and the training of personnel to maintain the cables.

III. Justification; economic analysis

1. Context and benefits

In most telephone exchange areas the primary and secondary cables are saturated, delaying the provision of service entirely in a number of important areas. In addition to rectifying this state of affairs, the project will enable work which has already started on the installation of primary and secondary cables in a number of new telephone exchange areas to be completed. This project makes an important contribution to the extension of telecommunications facilities throughout the country.

2. Cost

The estimated cost of the project is $775.85 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-009

NIGERIA: PROVISION OF RADIO RELAY ROUTES IN TRANSMISSION NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction work; supply and installation of equipment; and training of personnel

Location: Throughout the country

Cost: $140.4 million

External financing required: None

Duration: Five years

Desirable starting date: 1985

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The purpose of the project is to provide interurban radio relay transmission routes throughout the country.

2. Nature and constituent parts

The project comprises the following constituent parts:

- The construction of buildings and access roads;
- The supply and installation of radio relay equipment; and
- Training of personnel to operate and maintain the equipment.

III. Justification; economic analysis

1. Context and benefits

In the past few years, many new telephone exchanges have been built throughout the country with a view to extending the service to a wider population. The interurban trunk connecting circuits have proved inadequate in the face of the resulting growth of traffic. The project should provide for immediate and medium-term requirements.

2. Cost

The project is estimated to cost $140.4 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-010

NIGERIA: INSTALLATION OF TELEX/GENTEX SWITCHING EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of equipment; and training of personnel

Location: Throughout Nigeria - 150 locations

Cost: $37.8 million

External financing required: None

Duration: Three years

Desirable starting date: 1982

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The purpose of the project is to extend telex/gentex facilities to 150 locations spread throughout the country.

2. Nature and constituent parts

The project comprises the supply and installation of telex exchanges and teleprinters; and the training of personnel to maintain and operate the equipment.

III. Justification; economic analysis

1. Context and benefits

Nigeria has 14 telex exchanges located in state capitals and a few other large towns. Some of the state capitals do not have telex exchanges, being served as long-distance subscribers of the nearest exchange. This does not provide adequate service.

In this era, telex has become an essential tool of industry, commerce and administration, therefore indispensable for the economic well-being of every country. The extension of telex facilities throughout the country should build a sound communication base for the economy and should contribute to economic growth. The project will provide an additional 7,350 telex lines.

2. Cost

The estimated cost of the project is $37.8 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-011

NIGERIA: MODIFICATION OF TERMINAL EQUIPMENT FOR THE DOMESTIC SATELLITE COMMUNICATIONS SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of equipment

Location: 19 state capitals of the country

Cost: $43.2 million

External financing required: None

Duration: Two years

Desirable starting date: 1984

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The principal objective of the project is to improve the telecommunication services rendered via the domestic satellite communications system.

2. Nature and constituent parts

The project comprises the supply and installation of earth station equipment and its associated power supply and multiplex equipment.

III. Justification; economic analysis

1. Context and benefits

The domestic satellite communications system is utilized for telecommunication between the major centres in the country. The services provided comprise telephone, telex and special services such as national television and the dedicated circuits linking Nigerian External Telecommunications with major centres. The number of circuits is insufficient to meet the present demand. An increase in the number of circuits and a modification of the configurations of the earth station are required in the near future to meet the growing traffic requirements.

2. Cost

The project, which is estimated to cost $43.2 million, is financed by the Federal Government of Nigeria.

Project No. TEP-34-012

NIGERIA: RADIO MONITORING STATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction of station buildings; purchase and installation of equipment; and training of personnel

Location: Lagos, Ogoja, Gusau and Azare

Cost: $28.8 million

External financing required: None

Duration: Three years

Desirable starting date: 1984

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The objective is to monitor the frequencies used for transmission by radio equipment of various types operating throughout the country.

2. Nature and constituent parts

The project involves the following:

- Construction of four stations, located at Lagos, Ogoja, Gusau and Azare;
- Supply and installation of radio frequency monitoring equipment at those stations;
- Training of personnel to operate and maintain the equipment.

III. Justification; economic analysis

1. Context and benefits

During the third National Development Plan period, Nigeria embarked on a massive expansion in its telecommunications network, involving the construction of a number of UHF and VHF radio relay systems. These links and others privately owned will have to be allocated specific frequencies for their operation. Strict adherence to these transmission frequencies is essential. The frequency spectrum is an invaluable and limited resource, which needs to be carefully managed and planned if harmful interference between radio stations is to be avoided.

It is therefore proposed to build four radio monitoring stations. Efficient monitoring will ensure proper management of the frequency spectrum for all users. Only thus can reliability and high quality be maintained as the volume of equipment in use expands.

2. Cost

The project is estimated to cost $28.8 million. It will be financed by the Federal Government of Nigeria.

Project No. TEP-34-013

NIGERIA: EXTENSION OF TRANSMISSION NETWORK TO LINK LAGOS AND KADUNA WITH OTHER MAJOR CITIES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of equipment; and training of personnel

Location: Five major cities: Lagos, Kaduna, Enugu, Maiduguri and Bauchi

Cost: $7.23 million

External financing required: None

Duration: Three years

Desirable starting date: 1984

Project initiator: Ministry of Communications

Project management authority: Ministry of Communications

II. Description

1. Aim and objective

The purpose of the project is to increase the number of telephone channels available between Lagos, Kaduna, Enugu, Maiduguri and Bauchi.

2. Nature and constituent parts

The constituent parts of the project are:

- Supply and installation of equipment;
- Training of personnel to maintain and operate the equipment.

III. Justification; economic analysis

1. Context and benefits

The cities concerned are very important administrative and commercial centres. They are also transit centres for telephone exchanges within their areas, routing traffic to the small exchanges connected to them. Inter-city traffic is heavy and increasing all the time. The existing telephone channels cannot cope with the load.

2. Cost

The estimated cost of the project is $7.23 million. It will be financed by the Federal Government of Nigeria.

Project NO. TEP 35-001

RWANDA: INTERNATIONAL MICROWAVE LINK MT. JARI - NGARA (UNITED REPUBLIC OF TANZANIA)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Specification, purchase and installation of equipment

Location: Jari (Rwanda) and Ngara (United Republic of Tanzania)

Cost: $0.20 million

External financing required: $0.16 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to establish a line-of sight microwave radio link between Jari, Rwanda, and Ngara, United Republic of Tanzania, as part of the Pan-African TelecommunicationsNetwork (PANAFTEL).

2. Nature and constituent parts

Specification, purchase and installation of microwave equipment for an international link.

III. Justification: economic analysis

1. Context and benefits

The International Telecommunication Union has carried out a detailed feasibility study for a link between the two countries as part of PANAFTEL. It proposed this route as a means of improving significantly the quantity and quality of communications among neighbouring countries of the subregion.

2. Cost

The cost is estimated at $200,000, of which $160,000 would be financed from external sources.

Project No. TEP-35-002

RWANDA: INTERNATIONAL MICROWAVE LINK CYANGUGU (RWANDA)- BUKAVU (ZAIRE)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Specification, purchase and installation of equipment

Location: Cyangugu (Rwanda) and Bukavu (Zaire)

Cost: $0.16 million

External financing required: $0.15 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to complete the Central African subregional section of the Pan-African Telecommunications Network (PANAFTEL), thereby improving communications between Rwanda and Zaire.

2. Nature and constituent parts of the project

Specification, purchase and installation of a 120-channel microwave radio communication system equipped with 24-channel multiplexer, linking Cyangugu (Rwanda) and Bukavu (Zaire).

III. Description

1. Context and benefits

The new radio link will replace a lower-capacity cable link, thereby greatly facilitating communication between Zaire and Rwanda. It makes an important contribution to the extension of PANAFTEL.

2. Cost

The cost is estimated at $160,000, of which $150,000 is expected to be financed by the World Bank.

Project No. TEP 35-003

RWANDA: INTERNATIONAL LINK KIGALI - BUJUMBURA (BURUNDI): PHASE I

I. Identification and summary

Origin of the project: Submitted by the Government of Rwanda

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Specification, purchase and installation of equipment

Location: Rwanda-Burundi

Cost: $2.35 million

External financing required: $2.20 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunicati

II. Description

1. Aim and objective

The objective is to complete the Central African subregional section of the Pan-African Telecommunications Network (PANAFTEL), thereby improving telecommunications between Rwanda and Burundi.

2. Nature and constituent parts

Specification, purchase and installation of a 300-channel microwave radio relay system, ultimately linking Kigali (Rwanda) and Bujumbura (Burundi). In phase I of the project, two links out of the four envisaged will be completed: Kigali-Tumba within Rwanda and Tumba-Ngozi (Burundi).

III. Justification: economic analysis

1. Context and benefits

The existing UHF radio link between Kigali and Bujumbura is equipped with only six telephone lines and two telegraph and telex circuits. Its quality and capacity are not good enough to handle the constantly increasing flow of traffic. Furthermore, on completion of the project, the two satellite earth stations at the extremities of the link will be able to arrange complementary and traffic-sharing operations.

2. Cost

Total project cost is estimated at $2.35 million, of which $2.20 million is expected to be financed from external sources. Phase I is estimated to cost $950,000.

Project No. TEP-35-004

RWANDA: EXPANSION OF THE CAPACITY OF INTERURBAN MICROWAVE LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Technical studies and specification, purchase and installation of equipment

Location: Various locations

Cost: $2.53 million

External financing required: $2.26 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to install higher-capacity telecommunication facilities on three interurban routes.

2. Nature and constituent parts

(a) Three technical studies;

(b) Specification, purchase and installation of microwave broad-band radio relay equipment on three interurban routes, linking Kigali with Butare, Gisenyi and Ruhengeri, respectively with the capacity to transmit television programmes in the longer run in addition to an increased volume of the customary traffic.

III. Justification: economic analysis

1. Context and benefits

The existing network being of low-capacity along these routes will be unable to carry the increased flow of traffic resulting from the modernization of other installations. The three routes are the main axes constituting the backbone of the interurban network.

2. Cost

The cost is estimated at $2.53 million, of which $2.26 million would be met from external sources.

Project No. TEP-35-006

RWANDA: EXTENSION OF CT3, CTN AND LOCAL TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Technical studies and specification, purchase and installation of equipment

Location: Mainly at Kigali

Cost: $7.60 million

External financing required: $5.10 million

Duration: Two years

Desirable starting date: 1986

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The objective is to expand the capacity of telephone exchange to meet the expansion in traffic expected to result from the automation programme.

2. Nature and constituent parts

(a) Technical studies;

(b) Specification, purchase and installation of switching equipment to expand capacity of the following exchanges:

- International transit (CT3) at Kigali;
- National transit (CTN) at Kigali;
- Local at Kigali - a second exchange;
- Certain local exchanges.

III. Justification: economic analysis

1. Context and benefits

The automation of the national and international network is being carried out. The CT3 will be initially equipped with 40 international and 40 national junction circuits, while the CTN is to handle 1,000 erlangs. Both exchanges will be operational by 1984. With improved subscriber trunk dialing (STD) and semi-automatic international connection, a rapid increase in traffic is anticipated.

2. Cost

The cost is estimated at $7.60 million, of which $5.10 million would be financed from external sources.

Project No. TEP-35-007

RWANDA: EXTENSION OF THE RURAL TELEPHONE NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of equipment

Location: Rwanda

Cost: $4.00 million

External financing required: $4.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The aim is to continue to extend rural telecommunication services.

2. Nature and constituent parts

Supply and installation of VHF radio equipment for lengthy connection of rural subscriber circuits to the nearest provincial automatic telephone exchanges (direct dial access).

III. Justification: economic analysis

1. Context and benefits

The project will directly connect 40 rural communes to provincial exchanges. A pilot programme making use of this technique has already been carried out. The rural population will experience a significant improvement in communications.

2. Cost

The cost is estimated at $4 million, to be financed wholly from external sources.

Project No. TEP 36-001

SAO TOME AND PRINCIPE: MICROWAVE RADIO LINK BETWEEN SAO TOME AND PRINCIPE

I. Identification and summary

Origin of the project : Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature : Engineering studies, civil engineering, supply and installation of equipment and training of personnel

Location: Sao Tome and Santo Antonio

Cost: $1.07 million

External financing required: $0.97 million

Duration: Three years

Desirable starting date: 1984

Project initiator: ENATEL

Project management authority: ENATEL

II. Description

1. Aim and objective

The objective of the project is to develop the telecommunications links between the islands of Sao Tome and Principe.

2. Nature and constituent parts

The project comprises:

- Engineering studies;
- Civil engineering work;
- Supply and installation of a microwave radio link and other equipment;
- Training of maintenance personnel.

III. Justification; economic analysis

1. Context and benefits

There is currently a single HF microwave monochannel radio link between the islands of Sao Tome and Principe, which is very unreliable and of mediocre quality.

Through a project (RAF/BADEA/78/001) in connection with the development of the Pan-African Telecommunications Network, the International Telecommunication Union undertook a study on the modernization of the Sao Tome-Principe link by the installation of microwave radio equipment. The new link will enable the island of Principe to develop its international telecommunications through the Sao Tome satellite earth station.

The project will improve the economic and social integration of the two islands of the country.

2. Cost

The cost is estimated at $1.07 million. The Government is to provide for expenditure in local currency, which amounts to $100,000.

Project No. TEP-36-002

SAO TOME AND PRINCIPE: TELECOMMUNICATIONS EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase of telecommunications equipment

Location: Sao Tome

Cost: $0.18 million

External financing required: $0.18 million

Duration: Three years

Desirable starting date: 1984

Project initiator: ENATEL

Project management authority: ENATEL

II. Description

1. Aim and objective

The purpose is to meet the demand for telephones.

2. Nature and constituent parts

The project consists in the purchase of telecommunications equipment, mainly telephone sets.

III. Justification; economic analysis

1. Context and benefits

At the moment, there are 400 outstanding requests for telephones from would-be subscribers, compared to 1,400 lines in operation. The situation will grow even more serious. ENATEL has already conducted a study of future requirements and approached its regular supplies about financial terms for the purchase of the equipment.

2. Cost

The cost is estimated at $180,000; the entire amount is to be sought through external financing.

Project No. TEP-36-003

SAO TOME AND PRINCIPE: EXTENSION TO THE TELEPHONE EXCHANGES AT SAO TOME, NEVES AND SANTO ANTONIO

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction and supply and installation of equipment

Location: Sao Tome, Neves and Santo Antonio

Cost: $1.4 million

External financing required: $0.94 million

Duration: Four years

Desirable starting date: 1984

Project initiator: ENATEL

Project management authority: ENATEL

II. Description

1. Aim and objective

The purpose is to meet the demand for telephone service in the localities concerned.

2. Nature and constituent parts

The project comprises construction work to extend the telephone exchanges; and the purchase and installation of switching equipment to increase capacity as follows:

- At Sao Tome, from 2,000 to 5,000 lines;
- At Neves, from 100 to 200 lines;
- At Santo Antonio, from 100 to 200 lines.

III. Justification; economic analysis

1. Context and benefits

The telephone exchange at Sao Tome is a 1,000 crossbar type; it is expected to be saturated in 1985. The Neves exchange in the north-western region is of the PC 32 type, rural subscribers are being connected to it and saturation is expected to be reached in 1986. The Santo Antonio exchange is also of the PC 32 type, it is already virtually saturated in 1984. Between 1984 and 1986, in effect, the exchanges in the key areas of the country (the capital city, the north-western region and the island of Principe) will no longer be able to meet the demand for telephone service. A study on extension to these exchanges has already been undertaken in collaboration with Standard Electric of Portugal, the company which installed them. The project will restore equilibrium between supply and demand, as well as leaving a margin for future growth.

2. Cost

The cost is estimated at $1.4 million.

The Government has already provided $18.2 dobras in the 1982 budget for the project. The remaining $0.94 million is to be sought from external sources.

Project No. TEP-37-001

SENEGAL: EXTENSION OF THE 'FRATERNITY' SUBMARINE CABLE (ABIDJAN-DAKAR)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Purchase and installation of equipment

Location: Dakar

Cost: $0.35 million

External financing required: None

Duration: One year

Desirable starting date: 1984

Project initiator: TELESENEGAL and INTELCI

Project management authority: TELESENEGAL and INTELCI

II. Description

1. Aim and objective

The purpose is to double the capacity of the (Dakar-Abidjan) Fraternity submarine cable.

2. Nature and constituent parts

The project comprises the purchase and installation at Dakar of:

- A speech detector and an echo suppressor;
- A connection network;
- Two teleprinters;
- Two calculators and two machines for sending internal signals to the CELTIC equipment.

III. Justification; economic and financial analysis

1. Context and benefits

The capacity of the cable is expected to be saturated in 1984-1985. The benefits of the project are:

- Provision of a cable network system for the entire subregion;
- Diversification of the means of transmission in the subregion;
- Improvement of the quality of service, thereby promoting exchange in the subregion;
- Meeting growth in demand until a second submarine cable system between Dakar and Abidjan is installed.

2. Cost

The cost of the project is estimated at $0.35 million, to be financed by the Government of Senegal.

Project No. TEP-37-002

SENEGAL EXTENSION OF THE INTERNATIONAL TELEPHONE TRANSIT EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Purchase and installation of equipment

Location: Dakar

Cost: $4.00 million

External financing required: $4.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: TELESENEGAL

Project management authority: TELESENEGAL

II. Description

1. Aim and objective

The objective of the project is to increase the capacity of the international telephone transit exchange.

2. Nature and constituent parts

Purchase and installation at Dakar of switching equipment for:

- Extension of the code 5 and code R2 international junctions;
- Extension of the urban and interurban arrival and departure junctions;
- Extension of the instruction control unit (dispatchers and receivers).

III. Justification; economic analysis

1. Context and benefits

This transit exchange is expected to be saturated in 1985-1986. International traffic continues to grow. The project will enable the quality of service of the international network to be maintained. It will constitute an important step in the automation of international telephone traffic between African countries.

2. Cost

The cost is estimated at $4 million, to be financed wholly from external sources.

Project No. TFP-37-004

SENEGAL: EXTENSION OF THE INTERNATIONAL TELEX TRANSIT EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Purchase and installation of equipment

Location: Dakar

Cost: $1 million

External financing required: $1 million

Duration: Eight months

Desirable starting date: 1984

Project initiator: TELESENEGAL

Project management authority: TELESENEGAL

II. Description

1. Aim and objective

The purpose is to increase the capacity of the international telex exchange.

2. Nature and constituent parts

Purchase and installation at Dakar of the following equipment:

- Three ELTEX frames;
- Three 64K storage blocks;
- Stand-by power station plus software.

III. Justification; economic analysis

1. Context and benefits

The international telex exchange is obsolescent and is expected to be saturated by 1985. The national TW39 telex exchange is completely saturated. It is possible to extend the international exchange to a capacity of eight frames in all.

The project will enable the international exchange to cope smoothly with the growth of traffic. It will also make possible the provision of an adequate service to local subscribers, who now suffer from the obsolescence and saturation of existing urban telex exchanges. The establishment of a new telex exchange at Ponty will be economical.

2. Cost

The cost is estimated at $1 million, over 90 per cent of which is accounted for by the ELTEX frames. The project would be financed wholly from external sources.

Project No. TEP-37-005

SENEGAL: INSTALLATION OF A SECOND SATELLITE EARTH STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Purchase and installation of equipment

Location: Gandul

Cost: $6.7 million

External financing required: $6.7 million

Duration: Two years

Desirable starting date: 1984-85

Project initiator: TELESENEGAL

Project management authority: TELESENEGAL

II. Description

1. Aim and objective

The objective of the project is to establish direct links with countries which are not connected to the primary satellite over the Atlantic Ocean.

2. Nature and constituent parts

Purchase and installation at Gandul of equipment for a second satellite earth station and as a complement, a standard A antenna.

III. Justification; economic analysis

1. Context and benefits

Communication by satellite is possible at present only with countries connected to the primary satellite over the Atlantic Ocean. Further, the existing antenna requires to be replaced because of age and condition. The project will reinforce transmission facilities in the subregion.

2. Cost

The cost is estimated at $6.7 million, to be financed wholly from external sources.

Project No. TEP-37-009

SENEGAL: AUTOMATION OF THE CASAMANCE AND SENEGAL/EASTERN TELEPHONE NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction of buildings, supply and installation of equipment and local line networks; and engineering studies

Location: Various locations in Casamance and Senegal Eastern regions

Cost: $29.60 million

External financing required: $29.60 million

Duration:

Desirable starting date: 1985

Project initiator: Ministry of Information and Telecommunications

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

- Automation of existing telephone exchanges;
- Improvement in the quality of service provided to subscribers;

2. Nature and constituent parts

(a) Construction of buildings;

(b) Supply and installation of transmission and switching equipment as follows:

- For a transmission route to link Ziguinchor-Vélingara;
- Tambacounda on the one hand, and Tambacounda - Mont Mali (Guinea) on the other hand;
- For the automation of exchanges in Tambacounda and in the prefectures of the two regions;
- For the establishment of local line networks with capacity appropriate to that of the automatic exchanges;

(c) Engineering studies.

III. Justification; economic analysis

1. Context and benefits

The manual exchanges now provide a service of very poor quality and the local networks are obsolescent. There are numerous customers on the waiting list for connection to the local networks. The land-locked nature of the Casamance and Senegal /Eastern regions makes the provision of efficient telecommunications a priority matter. The modernization of existing equipment, including the automation of the Casamance and Senegal /Eastern networks, will contribute a great deal to the economic and social development of these regions.

2. Cost

The cost is estimated at $29.6 million, broken down as follows:

	In million $
Switching equipment	10,397
Transmission equipment	9,245
Networks	4,275
Buildings	2,951
Technics study and development of projects	2,732
Total	29,600

The project would be financed wholly from external sources.

Project No. TEP-37-017

SENEGAL: CONSTRUCTION OF A SUBMARINE CABLE WAREHOUSE AT DAKAR

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with subregional implications

Nature: Construction of a warehouse and purchase and installation therein of equipment

Location: Port of Dakar

Cost: $1.25 million

External financing required: $1.25 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: TELESENEGAL

Project management authority: TELESENEGAL

II. Description

1. Aim and objective

The purpose is the construction of a warehouse to store stand-by equipment for repair of broken cables and the stockpiling therein of such equipment.

2. Nature and constituent parts

The project comprises:

- Construction of a warehouse (area 2,000 m^2) at the port of Dakar;
- Purchase and installation of all equipment necessary for repairing a submarine cable locally (different types of cables, repeaters, equalizers).

III. Justification; economic analysis

1. Context and benefits

Stand-by equipment is at present stored at Brest (France) and Vigo (Spain). Dakar is an important submarine cable station (four submarine cables) and, by making stand-by equipment available locally, the project would facilitate repair work. There would be reduced interruption in cable system, with technical and financial advantages for the operation of the country's telecommunications.

2. Cost

The cost is estimated at $1.25 million, to be financed wholly from external sources.

Project No. TEP-37-021

SENEGAL: WEST AFRICAN CABLE FACTORY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: To be determined in detail: it would include, inter alia, construction of a factory and supply and installation of production equipment and services

Location: Thiès

Cost: $6.84 million

External financing required: $6.84 million

Duration: Not yet determined

Desirable starting date: 1985

Project initiator: Ministry of Posts and Telecommunications

Project management authority: Ministry of Posts and Telecommunications

II. Description

1. Aim and objective

The objective is to establish a cable factory to supply the West African subregion.

2. Nature and constituent parts

To be determined in detail: inter alia, construction of a factory at Thiès and supply and installation of all necessary equipment and services for manufacturing to take place. The theoretical annual production capacity of the factory would be 3,944 tons of power cables and 140,000 km of telephone cables. In the first year of operation, the production of 1,822 tons of power cables and 108,000 km of telephone cables is anticipated, or 46 per cent and 77 per cent, respectively, of capacity.

III. Justification; economic analysis

1. Context and benefits

Factory capacity has been based on a marketing study for the West African subregion conducted by SGI Télésuisse and, as far as telephone cables are concerned, on data collected from the African Union of Post and Telecommunications (UAPT). A significant and profitable market for power cables and telephone cables has been shown to exist. The project will secure independence from foreign sources for the supply of products indispensable for the proper operation of services. The transfer of technology which it will involve will be a further benefit to the country.

2. Cost

The cost is estimated at $6.84 million, of which $2.79 million would be required as working capital of the company to be established. The entire cost would be financed from external sources.

Project No. TEP-39-001

SIERRA LEONE: DEVELOPMENT OF METEOROLOGICAL TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction; purchase and installation of equipment; and training of personnel

Location: Freetown

Cost: $0.23 million

External financing required: $0.23 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Transport and Communications

Project management authority: Meteorological Department

II. Description

1. Aim and objective

The aim of the project is to develop the country's meteorological telecommunication services.

2. Nature and constituent parts

(a) Construction of building at Freetown;

(b) Supply and installation of equipment for a satellite earth station dedicated to meteorological service, including provision of full duplex links and terminal equipment for mutual exchange of processed meteorological information between Headquarters and Lungi International Airport;

(c) Training of personnel to maintain and operate the equipment.

III. Justification; economic analysis

1. Context and benefits

At present the facilities for the reception and exchange of meteorological data with other national meteorological services is far from adequate to meet growing needs in the fields of aviation and shipping and generally for forecasting adverse weather conditions. Sierra Leone is a part of the international meteorological community. For effective international co-operation in the World Weather Watch Programme of the World Meteorological Organization and in the activities of the International Council of Scientific Unions, an efficient and reliable communication system is essential. A satellite is expected to be launched by the European Space Agency, particularly for the benefit of the meteorological services of African countries.

2. Cost

The cost is estimated at $230,000, to be wholly financed from external sources.

Project No. TEP-39-002

SIERRA LEONE: TELECOMMUNICATIONS SATELLITE EARTH STATION, STANDARD A

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disddvantaged country

Nature: Technical study; supply and installation of equipment; and training of officers

Location: Freetown

Cost: $6 million

External financing required: $6 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Sierra Leone External Telecommunications Ltd.

Project management authority: Sierra Leone External Telecommunications Ltd.

II. Description

1. Aim and objective

The purpose is to improve external telecommunications.

2. Nature and constituent parts

The project will consist of a study to establish the detailed technical specifications; the supply and installation of equipment at Freetown for a satellite earth station, Standard A; and the training of officers to maintain and operate the equipment.

III. Justification; economic analysis

1. Context and benefits

The existing standard B earth station is virtually saturated and needs replacement. Reliable external telecommunication facilities are essential for the conduct of external trade of a country. They have incalculable benefits in the social and political context by facilitating easy contact between the Government and its agents abroad as well as between the population and people in other countries. The project will therefore have a positive impact on the economic activities of the country. In addition to enabling a greater volume of traffic to be carried to the countries now served by the standard B station, the establishment of a standard A station will permit Sierra Leone External Telecommunications Ltd. to orientate the standard B station to the Indian Ocean satellite, thus providing direct communications with the countries of the Far East; at present the country has to pay transiting fees for such communications.

2. Cost

The cost is estimated at $6 million, made up as follows:

	In million $
Technical study	0.3
Supply and installation of equipment	5.5
Training of officers	0.2
Total	6.0

Project No. TEP-39-003

SIERRA LEONE: EXTENSION OF TELECOMMUNICATIONS FACILITIES TO THE RURAL AREAS - SECONDARY TELEPHONE NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction work; and supply and installation of equipment and outside plant

Location: Fourteen rural towns in the hinterland of the country

Cost: $4 million

External financing required: $3.2 million

Duration: Two years and six months

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to extend telecommunications facilities to 14 towns in the hinterland of the country.

2. Nature and constituent parts

Telephone service will be provided to the following rural towns: Waterloo, Kabda, Masaia, Kailahan, Daru, Bunumbu, Pendembu, Makanji, Mattru, Bonte, Blama, Boajibu, Bumbuna and Massaika. The project has the following constituent parts:

(a) Supply and installation of transmission and switching equipment and outside plant:

- For low capacity VHF/UHF radio relay links to connect the towns to the national backbone microwave system;
- For low capacity automatic exchanges and manual switchboards;
- For local distribution networks to serve subscribers in the towns concerned;

(b) Construction work.

III. Justification; economic analysis

1. Context and benefits

The public telecommunications network of Sierra Leone is developed only in a few important towns and as a result most of the country is deprived of any communication facilities. The national backbone microwave links and the newly constructed national section of the Pan-African Telecommunications Network serve only the important regional towns, even though those links go through or pass very close to a number of rural towns. Consequently, the isolation and frustration of the inhabitants of the latter towns increase as they see modern development around them and yet cannot enjoy its benefits. Since the greater part of the national wealth is created by the rural community, this state of affairs is inimical to the total development effort of the country and needs to be arrested.

The implementation of the project will connect the 14 rural towns to the national telecommunications network and thus make it possible for them to be reached from all the regional capitals. This will break down their communications isolation and should enhance their economic activity and administration. Furthermore, it should promote agricultural production through the provision of an efficient and reliable means of disseminating market information.

2. Cost

The cost is estimated at $4 million, made up as follows:

	In million $
10 VHF/UHF secondary links	1.6
Switchboards and construction of local distribution network	2.4
Total	4.0

The project would be financed as to 80 per cent from external sources.

Project No. TEP-39-004

SIERRA LEONE: IMPROVEMENT AND EXTENSION OF TELEPHONE FACILITIES IN THE FREETOWN URBAN AREA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a 'disadvantaged' country

Nature: Civil works; and supply and installation of equipment and outside plant

Location: Freetown

Cost: $11 million

External financing required: $11 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose of the project is to improve and extend telephone facilities in the city by rearranging and extending the cable distribution network as well as restructuring the switching network.

2. Nature and constituent parts

The project consists of the following:

- Civil works for underground cable network;
- Supply and laying of cables;
- Supply and installation of exchange equipment.

III. Justification; economic analysis

1. Context and benefits

In certain suburbs of the capital city of Freetown an adequate telephone service cannot be provided. Along Wilkinson Road, parts of Cline Town and Kissy village, especially, demand cannot be satisfied because the primary cables serving the area are saturated. Another distinguishing feature of the network is the inadequacy of the junction cables between Juba, Wellington and Fourah Bay College exchanges. This undesirable characteristic causes a large number of unsuccessful attempted calls, thereby increasing the congestion between the exchanges. The solution is rearranging and extending the cable distribution network.

The switching network of Freetown is structured in such a manner that Wilberforce and Cline Town exchanges are independent local exchanges. This means that calls between their subscribers and those on other Freetown exchanges are unnecessarily expensive, since they are routed as trunk calls. This situation cannot be remedied unless new equipment is installed, as part of a restructuring of the switching network.

Increasing the capacity of the cable network will allow the Post Office to satisfy the great demand for telephones in Cline Town, Wilkinson Road and Tengbeh town. The estimated traffic from those areas is high and should enable the investment to pay for itself in a very short time. The provision of more junction circuits to Juba, Wellington and Fourah Bay College exchanges and the restructuring of the switching network so that Juba and Wellington exchanges become satellite exchanges of Wilberforce and Cline Town, respectively, should improve considerably the telephone facilities in these areas in particular and Freetown in general.

Included in the restructuring is the extension of these exchanges by 1,000 lines. This should also result in the satisfaction of demand and a general improvement in the telecommunication service offered in Freetown, contributing to reduced transportation costs and hence indirectly to a re-allocation of essential fuel resources.

2. Cost

The cost is estimated at $11 million, to be wholly financed from external sources.

Project No. TLP-39-005

SIERRA LEONE: PROVISION OF TELEPHONE FACILITIES ALONG THE FREETOWN PENINSULA AREA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of transmission equipment and coin boxes

Location: Sussex, Hamilton, No.2 River, Toko, York, Kent, Tumbo, Banana Island and Juba

Cost: $3 million

External financing required: $3 million

Duration: One year and six months

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to extend telephone facilities to eight principal towns along the peninsula area of Freetown.

2. Nature and constituent parts

The peninsula towns concerned are: Sussex, Hamilton, No.2 River, Toko, York, Kent, Tumbo, Banana Island and Juba. The project consists of the following parts:

- Supply and installation of transmission equipment (radio relay, multiplex, etc.) and associated power units (solar cells, diesel generators, etc.);
- Supply and installation of manual switchboards and automatic coin-operated public telephones.

III. Justification; economic analysis

1. Context and benefits

The towns along the peninsula have no telephone facilities, i.e. they are cut off from Freetown, the capital, even though they are physically very near to it.

The main occupations of their inhabitants are agriculture and fishing. The area is the bread basket of Freetown. Good communications with Freetown are therefore essential in order to ensure a reliable supply of agricultural produce to the capital city. Furthermore, these towns are located on beautiful beaches along the peninsula and have a very high tourist potential. Attention is now being given at the national level to the development of the tourist industry as a possible source of foreign exchange. It must be emphasized here that an efficient and reliable telecommunications service is an essential component of a successful tourist industry.

The project should promote the development of the tourist industry as well as provide market information for the agricultural producers on the peninsula. It should therefore encourage agricultural production and act as a catalyst in economic development.

2. Cost

Provisionally, it is estimated the project will cost $3 million, to be wholly financed from external sources.

Project No. TEP-39-006

SIERRA LEONE: THE PROVISION OF A NATIONAL TELEX NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project FOR A disadvantaged country

Nature: Supply and installation of equipment

Location: Freetown and nine provincial towns

Cost: $3.5 million

External financing required: $3.5 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The purpose is to extend the telex network to the provincial towns of Sierra Leone by connecting subscribers in those remote towns to the telex exchange in Freetown.

2. Nature and constituent parts

The project involves the supply and installation of subscriber terminal equipment for telex at Freetown and transmission facilities such as voice frequency telegraphy systems to nine towns: Bo, Kerena, Kodu, Makeni, Bonthe, Marampa, Port Loko, Bumbura and Kambia.

III. Justification: economic analysis

1. Context and benefits

Sierra Leone has one telex exchange, located at Freetown. The provincial towns are therefore deprived of this important means of communications for the business community.

Recently, the backbone national microwave links which go through a number of provincial towns have been renewed and rehabilitated. Also the recently completed links of the Pan-African Telecommunications Network have made available reliable transmission circuits between Freetown and some of the important provincial towns. Thus, the transmission that remains to be done is to adapt these telephone circuits by installing voice frequency telegraphy equipment. A large number of potential subscribers in the provinces generating a low volume of traffic means that concentrator facilities will be provided, in order to reduce transmission costs.

The extension of telex facilities to the provincial towns should help businesses located in those areas to operate efficiently. It should also remove one of the objections (no telex facilities) which companies put forward for not setting up in towns other than Freetown. It should therefore encourage a more even distribution of commercial enterprises throughout the country. It will stem the tide of migration from the rural areas to the cities.

2. Cost

The project is estimated to cost $3.5 million, to be financed entirely from external sources.

Project No. TEP-39-007

SIERRA LEONE: PROVISION OF AUTOMATIC EXCHANGE AT PORT LOKO, NJALA AND MOYAMBA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction of buildings; supply and installation of equipment and associated outside plant; and training of personnel

Location: Port Loko, Njala and Moyamba

Cost: $5 million

External financing required: $4.6 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Department

Project management authority: Posts and Telecommunications Department

II. Description

1. Aim and objective

The aim of the project is to improve the telecommunication facilities in the important towns of Port Loko, Moyamba and Njala.

2. Nature and constituent parts

The project involves the supply and installation of switching equipment for automatic exchanges at Port Loko (500 lines), Moyamba (500 lines) and Njala (100 lines) and of outside plant for associated local distribution networks; also of a 100-line PABX for the university campus of Njala. Buildings to house the equipment will be constructed in the three towns. Personnel will be trained.

III. Justification; economic analysis

1. Context and benefits

Port Loko, Moyamba and Njala are served by old manual switchboards which cannot cope with the traffic originated within the towns and are no longer reliable. Telephone service in these towns is characterized by the high number of unsuccessful calls. Subscribers complain unceasingly. It is foreseen that the difficulties encountered by subscribers will worsen with time unless the local and switching networks are overhauled. The towns are fast growing and important: Njala is a university town with a very high level of literacy; Port Loko and Moyamba are both district and agricultural centres.

The introduction of automatic exchanges will immediately improve the telephone service offered. Moreover, since those exchanges will be connected to the national subscriber trunk dialling network, communications with the rest of the country will be opened up and the isolation of these towns will be broken, contributing indirectly to their economic development and efficient management.

2. Cost

The cost is estimated at $5 million, of which $4.6 million would be financed from external sources.

Project No. TEP-39-008

SIERRA LEONE: ESTABLISHMENT OF RADIO FREQUENCY MONITORING AND MOBILE STATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Establishment of a radio frequency monitoring station and mobile units

Location: Freetown

Cost: $0.50 million

External financing required: $0.40 million

Duration: One year

Desirable starting date: 1984

Project initiator: Department of Posts and Telecommunications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The project is aimed at ensuring that frequency assignments in Sierra Leone are effectively managed and controlled by means of a properly equipped monitoring station having the capability to monitor frequencies in all the usable bands.

2. Nature and constituent parts

The project involves the establishment of a frequency monitoring station complete with mobile units and the training of local personnel to operate and maintain the station.

III. Justification; economic analysis

1. Context and benefits

The telecommunications network of Sierra Leone does not cover the entire country. It is at the moment limited to the principal towns. Companies such as mining and timber concerns which operate in the remote rural areas are obliged to have their own independent means of communications between their branches in the field and the head office in Freetown. It is also intended to introduce fairly soon citizen-band radio communications. The widespread use of private communication system utilizing frequencies in the VHF and HF bands and the imminent introduction of citizen-band radio communications necessitates stringent control and assignment of frequencies.

Frequency spectrum is an essential and scarce resource of a country and its judicious use and wise management should enhance good and interference free communications. The project, when successfully completed, should offer facilities for monitoring frequencies, tracking down harmful interference in all the usable frequency bands and detecting illegal use of unassigned frequencies. The project should therefore result in a better and effective management of Sierra Leone's frequency spectrum.

2. Cost

The estimated cost of the project is $500,000.

Project No. TEP-41-001

SUDAN: ESTABLISHMENT OF SUDAN-EGYPT (ATBARA-WADI HALFA-ASWAN) MICROWAVE RADIO RELAY LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of equipment

Location: Atbara-Abu Hamad-Wadi Halfa

Cost: $8.00 million

External financing required: $8.00 million

Duration: Three years

Desirable starting date: 1984

Project initiator: The Governments of the Sudan and Egypt

Project management authority: Sudan Telecommunications Public Corporation

II. Description

1. Aim and objective

The objective of the project is to establish a microwave radio relay link between the Sudan and Egypt.

2, Nature and constituent parts

The project involves the purchase and installation of equipment.

III. Justification; economic analysis

1. Context and benefits

The existing troposcatter link between Wadi Halfa and Aswan performs very poorly. This link, which dates back to the early 1960s, hardly provides the communication requirement between the two countries. Adequate direct communication including TV necessitates the implementation of this important link which furthermore forms part of the PANAFTEL Network and has been studied during the early 1970s.

This project is part of the ongoing approved PANAFTEL project, the content and benefits of which are already justified.

2. Cost

The cost of the project for the portion of the link to be implemented within the Sudanese border at Wadi-Halfa is $8.00 million, which includes the cost of procurement and installation of equipment and the cost of supporting services.

Project No. TEP-41-002

SUDAN: IMPLEMENTATION OF SUDAN-ETHIOPIA (GEDAREF-BAHR-DAR) MICROWAVE RADIO RELAY LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of equipment

Location: Gedaref-Doka-Gallabat

Cost: $2.50 million (Sudanese portion)

External financing required: $2.50 million

Duration: Two years

Desirable starting date: 1984

Project initiator: The Governments of the Sudan and Ethiopia

Project management authority: Sudan Telecommunication Public Corporation and PATU/ITU consultants if so desired by donors

II. Description

1. Aim and objective

The objective of the project is to establish a microwave radio relay link between the Sudan and Ethiopia.

2. Nature and constituent parts

The project involves preparatory operations and the purchase and installation of equipment, in particular:

- Survey of route;
- Infrastructure;
- Construction (buildings);
- Supply and installation of aerial supporting structures;
- Supply and installation of power supply systems;
- Supply and installation of radio and multiplex equipment;
- Supply of test/maintenance equipment and spares;
- On-the-job training of personnel;

III. Justification; economic analysis

1. Context and benefits

There is practically no direct means of communication between the Sudan and Ethiopia or other East African countries (Kenya, Uganda, etc.). At present communication to these countries is only possible through transiting centres in Europe. Furthermore this link forms part of the PANAFTEL Network. National requirements along the route could also be satisfied.

This project is part of the approved ongoing PANAFTEL project, the content and benefits of which are already justified.

2. Cost

The cost of the project for the portion of the link to be implemented within the Sudanese border at Gallabat is $2.50 million which includes the cost of procurement and installation of equipment and the cost of supporting service

Project No. TEP-41-003

THE SUDAN: FEASIBILITY STUDY AND PRELIMINARY FIELD SURVEY FOR THE CONTINUATION OF THE UHF LINK ACROSS THE NORTH WESTERN KENYAN BORDER TO KAPOITA, TORIT TILL JUBA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Feasibility study and field survey

Location: Juba - Torit - Kapoita

Cost: $0.50 million

External financing required: $0.50 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: The Government of the Sudan and Kenya

Project management authority: Sudan Telecommunication Public Corporation

II. Description

1. Aim and objective

The aim of the project is to determine the feasibility of establishing this link which will provide a direct communication link between the Sudan and Kenya, which at present can only communicate through transit centres in Europe.

2. Nature and constituent parts

The project involves:

- A feasibility study;
- Field survey;
- Preparation of specification and tender documents.

III. Justification; economic analysis

1. Context and benefits

The present inadequate communications between the two countries and the anticipated demand for direct and quick means make it imperative to establis this link. Implementation of the project would establish adequate and reliab communication facilities between the two countries and would boost mutual political, commercial, economic and social relations.

2. Cost

The cost of the project in its preliminary stage (study and field survey is estimated at $0.50 million.

Project No. TEP-41-005

SUDAN: UPGRADING OF UMM HARAZ INTERNATIONAL EARTH STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvantaged country

Nature: Procurement and installation of equipment

Location: Umm Haraz (south of Khartoum)

Cost: $1.00 million

External financing required: $1.00 million

Duration: One year

Desirable starting date: 1984

Project initiator: The Government

Project management authority: Sudan Telecommunication Public Corporation

II. Description of the project

1. Aim and objectives

The project is designed to expand the international outlets of the earth station by introducing FDM/FM circuits.

2. Nature and constituent parts

The project comprises:

- Supply and installation of FDM/FM equipment;
- Rehabilitation of the antenna tracking subsystem.

III. Justification; economic analysis

1. Context and benefits

The Sudan has recently installed a modern national/international switchin centre. The present bottleneck at the international outlet necessitates the upgrading and expansion of its existing international standard "A" earth station.

2. Cost

The cost of the project is estimated at $1.00 million including purchase and installation of equipment and rehabilitation of antenna tracking subsystem.

Project No. TEP-41-006

THE SUDAN: RETROFIT AND REHABILITATION OF THE SUDAN DOMESTIC SATELLITE SYSTEM (SUDOSAT)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of equipment and parts to modify and rehabilitate existing earth stations and establish a new one

Location: 14 domestic earth stations scattered around the country

Cost: $17.00 million

External financing required: $17.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: The Government

Project management authority: Sudan Telecommunication Public Corporation

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II. Description

1. Aim and objective

The objective of the project is to improve the domestic satellite system of the Sudan to meet international requirements.

2. Nature and constituent parts

The project is a composite one including:

- Retrofitting of the existing 14 earth stations for dual polarization operations;
- Upgrading the performance of the existing earth stations;
- Supply and installation of a new earth station at El-Obied.

III. Justification; economic analysis

1. Context and benefits

(a) According to INTELSAT it is mandatory to retrofit the antenna feeds of the 14 earth stations of the domestic satellite system in order to handle dual polarization for operation with INTELSAT V satellites.

(b) The present state of the system calls for quick rehabilitation measures. A new earth station at El-Obied is also required.

The SUDOSAT system, installed in 1977, provided a quick solution to the communication problem in the Sudan which is most suited to the application of such system. The mandatory requirement of INTELSAT makes this project of high priority as it is required to retrofit the stations for dual polarization by the end of 1984. In order to upgrade its performance some rehabilitation is also required.

2. Cost

	In million $
Retrofit of 14 earth stations	10.00
Rehabilitation	3.50
New earth station at El-Obied	3.50
Total	17.00

Project No. TEP-41-007

SUDAN: CAPACITY EXPANSION AND REHABILITATION OF THE MICROWAVE BACKBONE NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a 'disadvantaged' country

Nature: Procurement and installation of equipment

Location: Various locations along the existing microwave backbone network

Cost: $7.50 million

External financing required: $7.50 million

Duration: Two years

Desirable starting date: 1984

Project initiator: The Government

Project management authority: Sudan Telecommunication Public Corporation

II. Description

1. Aim and objective

The project is designed to rehabilitate the existing microwave backbone system and its associated power systems in order to upgrade the performance of the existing links and to ensure proper inter working with the recently installed national/international switching centre and also to establish adequate base for future expansion to cater for the new planned exchange.

2. Nature and constituent parts

The project comprises:

- Procurement of necessary equipment to rehabilitate the Sennar-Gedaref-Kassala and Sennar-Kosti-El-Obied links;
- Expansion of the existing multiplex capacity;
- Replacement of the old Khartoum-Wad Medani-Sennar microwave link.

III. Justification; economic analysis

1. Context and benefits

The project will provide adequate base for future expansion of the backbone transmission network which provides for wide-band transmission including TV linking major towns and cities.

2. Cost

	In million $
Rehabilitation and multiplex expansion	5.00
Replacement of the Khartoum-Wad Medani-Sennar link	2.50
Total	7.50

Project No. TEP-41-010

THE SUDAN: IMPROVEMENT OF THE TELEGRAPHY SERVICES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications [illegible]

Order of priority: National project for a disadvantaged country

Nature: Procurement and installation of equipment

Location: Various locations

Cost: $2.00 million

External financing required: $2.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: The Government

Project management authority: Sudan Telecommunication Public Corporation

II. Description

1. Aim and objective

The aims of the project are:

- Introduction of a Gentex exchange at Khartoum to facilitate direct switching of telegraph messages at the national level;
- Rehabilitation and upgrading of the telegraphy services by replacing the existing HF circuits so as to back up the telegraphy of the SUDOSAT system.

2. Nature and constituent parts

The project calls for:

- Provision of a 500-line Gentex exchange by rehabilitating the old telex exchange;
- Replacement of the HF telegraph equipment.

III. Justification; economic analysis

1. Context and benefits

The telegraph service is relatively the cheapest means of quick communication which could be made available to a wider sector of the public especially to those who can not benefit from the telephone service which is as yet only available to a very limited portion of the population and will remain so for a number of decades to come.

The present status of the telegraph service could be rated as very poor, having deteriorated drastically during the last few years due, inter alia, to

- The deterioration of the performance of the existing HF transmission equipment which is being operated beyond its useful operational lifetime and obviously the procurement of the spares to keep these HF networks operational is becoming prohibitive if not impossible;

- Collapse of some of the old traditional overhead open-wire transmission networks which are also becoming very difficult to maintain. Several plans have been put forward to replace these networks by modern technologies but have not materialized. Consequently this has led to dissatisfaction among the service users and the present project is intended to rectify the situation with the least effort, minimum cost and in the shortest possible time so as to regain public confidence in this type of service.

2. Cost

	In million $
500-line Gentex exchange	0.50
HF telegraph transmission equipment	1.50
Total	2.00

Project No. TEP-42-001

SWAZILAND: PROVISION OF FOUR-WIRE TRUNK TRANSIT SWITCHING EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Provision of four-wire trunk transit switching exchange (1,000 lines)

Location: Ntondozi

Cost: $4.32 million

External financing required: $3.88 million

Duration: One year

Desirable starting date: 1984

Project initiator: Ministry of Works and Communications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The project is designed to improve traffic routing and operation between African countries and other continents, by installation of an international switching exchange with automatic billing facilities. The exchange will also serve national traffic purposes and in addition will be equipped with subscriber stage equipment to handle eight small remote subscriber stage type exchanges located in the remote rural areas of the country and connected to the international switching exchange by an overlay digital microwave trunk network.

2. Nature and constituent parts

- Preparation of the technical specification;
- Purchase of the equipment;
- Building of the premises, viz., extension of the existing Ntondozi radio station building, installation and commissioning of the equipment;
- Training of local staff.

The four-wire international trunk and transit switching exchange will be initially equipped for 1,000 telephone trunk junctions and capable of handling a minimum of 60 routes (initially 19 national, six inter-territorial and five international). It will also include automatic billing facilities and in addition will be equipped with subscriber stage equipment to handle a total of 1,068 lines connected to remote subscriber stage type exchanges.

III. Justification: Economic analysis

1. Context and benefits

The four-wire switching basis will improve the routing technical performances up to the CCITT standards, and the transit facilities will allow Swaziland to meet the demands for national and international telephone traffic. The project is economically viable.

2. Cost

The total cost of the project is $4.32 million.

The project has been submitted by the Southern Africa Transport and Communications Commission (SATCC) with a view to obtaining donor or external funds for the equipment, plus training, installation and commissioning. Both the Governments of Italy and Sweden have shown an interest in funding the project and a second feasibility study was recently completed and forwarded to SATCC to meet a request from the Italian Government. The costs of an extension to the Ntondozi building together with costs of local installation staff estimated at $433,000 will be covered by local funds.

Project No. TEP 42-002

SWAZILAND: EXTENSION TO MBABANE AUTOMATIC TELEPHONE EXCHANGE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of digital switching equipment.

Location: Mbabane

Cost: $3.10 million

External financing required: $3.00 million

Duration: One year

Project initiator: Ministry of Works and Communications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The objective of the project is to meet demand for telephone service in Mbabane for the five-year period 1988 - 1993). With the introduction of the trunk transit switching exchange and the eight rural remote switching stage type exchanges in 1985, Swaziland will have made a start in digitalizing its network. All projects after 1985 must therefore be examined in the light of further digitalisation of the network. It is considered suitable and desirable to have the extension of the Mbabane exchange in the form of a new digital unit in order that the most up to date telephone facilities can commence to be provided in the capital city.

2. Nature and constituent parts

The main constituent parts of the project are:

- Preparation of the technical specification;
- Purchase and installation of the equipment forming the new 5,000-line digital unit;
- Training (as necessary) of local staff.

III. Justification: Economic analysis

1. Context and benefits

The project will make possible the expansion of the subscriber base by 5,000 lines and offer advanced subscriber facilities in the capital city. The project is economically viable.

2. Cost

The total cost of the project is $3.10 million. The costs of the local installation staff including miscellaneous costs such as air conditioning in the existing building estimated at $100,000 will be covered by local funds.

Project No. TEP-42-003

SWAZILAND: EXTENSIONS TO RURAL AUTOMATIC TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Specification,supply and installation of switching equipment to extend rural exchanges.

Location: Rural areas of Swaziland

Cost: $1.05 million

External financing required: $0.96 million

Duration: Two years

Desirable starting date: Late 1983

Project initiator: Ministry of Works and Communications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objectives

The aim of the project is to meet the demand for automatic telephone service in the rural areas of Swaziland.

2. Nature and constituent parts

The constituent parts of the project are:

- Preparation of technical specifications;
- Purchase and installation of the equipment needed for 2,200 additional lines capacity.

The concerned exchanges are situated at Mhlambanyati, Mhlume, Siteki, Maphiveni, Big Bend, Nhlangano, Hlatikulu, Nsoko, Piggs Peak, Bulembu, Mankayane and Matsapha.

III. Justification: Economic analysis

1. Context and benefits

The project will make possible the expansion of the subscriber base at the 12 existing rural exchanges by 2,200 lines and will contribute to the economic and social development of these areas by offering improved communications services. The project is economically viable.

2. Cost

The equipment and installation cost is $0.96 million out of a total of $1.05 million. Under its third loan for telecommunications development and expension in Swaziland, ADB has restricted its loan to urban development and expansion. The Italian Government however has shown interest in funding this project. Accommodation exists at all the exchanges for the extension equipment Local installation staff costs estimated at $90,000 will be covered by local funds.

Project No. TEP-42-004

SWAZILAND: EXPANSION OF THE NATIONAL RADIO TRUNK NETWORK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Specify, supply and install analogue and digital transmission equipment to expand the national radio trunk network

Location: Swaziland

Cost: $5.50 million

External financing required: $4.80 million

Duration: Two years

Desirable starting date: Late 1983

Project initiator: Ministry of Works and Communications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective

The project is designed to meet the demand for national and international telephone and telex traffic and to provide the telephone channels required for the trunk and transit switching centre at Ntondozi.

2. Nature and constituent parts

Expansion of the existing analogue national radio trunk network, includin the provision of new spur routes, additional terminals and VFT telegraph beare Provision of a new overlay digital national radio trunk network. The main components of the project are:

- Preparation of technical specifications;
- Purchase, installation and commissioning of the equipment;
- Training (as necessary) of local staff
- The routes, etc. are:

Analogue Radio

- Ntondozi to Matsapha/Earth Satellite Station/Mankayane/Malkerns,
- Big Bend to Nsoko,
- Piggs Peak to Bulembu,
- Earth Station to Lobamba, and
- Translating equipment for 20 supergroups at Ntondozi,
- Multiple access radio at Siteki and Mliba,
- VFT bearer terminals for Mbabane, Manzini, Matsapha, Big Bend, Siteki and Maphiveni.

Digital Radio

- Ntondozi to Siteki/Bhunya/Ngwenya,
- Siteki to Matata/Tshaneni,
- Tshaneni to Lusoti,
- Matata to Hluti/Lavumisa/Kubuta.

III. Justification: Economic analysis

1. Context and benefits

The project will make possible the required trunk network expansion to meet the subscriber base growth. There are substantial benefits for social and commercial activities throughout the country as a result of the implementation of the project. The project is economically viable.

2. Cost

The total project cost is $5.50 million. The costs of radio tower bases, radio towers, passive reflectors and local installation staff estimated at $700,000 will be covered by local funds.

The servicing costs of the proposed CIDA suppliers credit type loan were found to be beyond the ability of the Government to sustain. However, the Italian Government has expressed interest in making available a soft loan to cover the external financing of the project.

Project No. TEP 42-005

SWAZILAND: DEVELOPMENT OF RURAL TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Supply and installation of switching equipment, construction of exchange buildings

Location: Throughout the remote rural areas of Swaziland

Cost: $0.72 million

External financing required: $0.51 million

Duration: One year

Desirable starting date: Late 1984

Project initiator: Ministry of Works and Communications

Project management authority: Department of Posts and Telecommunications

II. Description

1. Aim and objective:

The project aims to meet the demand for automatic telephone service in the remote rural areas of the country.

2. Nature and constituent parts

The main parts of the project are:

- Preparation of technical specifications;
- Provision of suitable small air conditioned buildings;
- Purchase, installation and commissioning of the exchanges;
- Training of local staff.

The locations of the new exchanges are at Tshaneni, Lusoti, Bhunya, Ngwenya, Matata, Hluti, Lavumisa and Kubuta.

III. Justification: Economic analysis

1. Context and benefits

The project will make possible the expansion of the automatic subscriber base into the remote rural areas and will contribute to the economic and social development of the remote rural areas by providing improved communications facilities. The project is economically viable.

2. Cost

The total project cost is $0.72 million. The costs of the buildings and local installation staff estimated at $200,000 will be covered by local funds.

The Italian Government has shown interest in providing the external financing of the project.

Project No. TEP 43-001

UNITED REPUBLIC OF TANZANIA: MICROWAVE LINK WITH RWANDA, TANZANIA NGARA TERMINAL

I. Identification and summary

Origin of the project: Submitted by the Governments of Rwanda and the United Republic of Tanzania

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of microwave and multiplex equipment

Location: Ngara and Kigali (Rwanda)

Cost: $0.13 million

External financing required: $0.11 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Tanzania Posts and Telecommunications Corporation

Project management authority: Tanzania Posts and Telecommunications Corporation for Tanzania side and Rwanda to manage its side

II. Description

1. Aim and objective

The aim of the project is to establish direct communication circuits between the United Republic of Tanzania and Rwanda to satisfy traffic demand generated by transit trade, etc.

2. Nature and constituent parts

The project includes procurement and installation of microwave and multiplex equipment for the Tanzania - Rwanda PANAFTEL link Ngara - Mt. Jari, near Kigali. The trunks arising from this project will be extended to Dar-es-Salaam through Mwanza - Bukoba/Kigoma microwave link under construction (1985) and the existing Mwanza - Dodoma - Dar-es-Salaam microwave system, so that Tanzania's project share includes only one microwave terminal to be installed at Ngara and multiplex equipment for 12 channels at Dar-es-Salaam. Infrastructure such as buildings and aerial tower are available at Ngara.

Kigali is currently linked with Mt. Jari via an underground cable which will be replaced by a high-capacity microwave link, the implementation of which should be co-ordinated with this project. The microwave system will be planned on a 1 + 1 basis and should be capable of transmitting a PAL colour TV signal on the stand-by circuit.

III. Justification; economic analysis

1. Context and benefits

At present as no direct telecommunications circuits exist between Tanzania and Rwanda, traffic must be routed via London - Brussels at high rates and low grade of service; traffic demands cannot be met.

The planned link would open up efficient communications to meet unsatisfied demands predominantly of the business communities.

Economic activities generating trunk traffic include import/export of Rwandan goods through Tanzanian ports and trade with industrial and agricultural products between the two countries, etc. Historical data of HF circuits operated in the early 1970s indicate high traffic growth rates. Demand forecasts have to be estimated; they cannot be based on the old data. Only a few circuits with normal traffic load are required to meet the economic break-even point under these conditions. In a cost/bebefit analysis required investments will be compared with additional income from trunk calls. A high-grade trunk network up to the Rwandan border will be available in 1985 and a linking up project is due and viable.

Lines of co-operation between Rwanda and Tanzania likely to generate traffic demand include:

- Industrial co-operation (exchange of personnel);
- Transport agreement (road and railway construction and operation);
- Cultural co-opration (teacher and student exchange);
- Transit facilities (warehouse)
- Air transport agreement by which Tanzania is obliged to provide communication facilities.

2. Cost

The total cost is estimated at $0.13 million.

Project No. TEP 43-002

UNITED REPUBLIC OF TANZANIA: MICROWAVE LINK WITH BURUNDI-TANZANIA

I. Identification and summary

Origin of the project: Submitted by the Governments of Burundi and the United Republic of Tanzania

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of microwave and multiplex equipment

Location: Kigoma and Songo (Burundi)

Cost: $0.47 million

External financing required: $0.35 million

Duration: Three years

Desirable starting date: 1984

Project initiator:

Project management authority: Tanzania Posts and Telecommunications Corporation

II. Description

1. Aim and objectives

The aim of the project is to provide direct communication circuits between the United Republic of Tanzania and Burundi to meet traffic demands generated by transit trade, etc.

2. Nature and constituent parts

The project includes procurement and installation of microwave and multiplex equipment for the PANAFTEL link between Kigoma and Songo in Burundi, via Kisozi and covers a distance of 82 km. Between Kigoma and Mwanza a cable link is already under construction.

The infrastructure situation is very encouraging. Of the two microwave stations required, one is already provided under the Mwanza- Bukoba/Kigoma microwave project (1985) and at the second site a building was constructed in preparation of the project. The route has already been surveyed and detailed plans for tendering have been drawn up.

III. Justification; economic analysis

1. Context and benefits

A high-grade national trunk network extending to the Burundi border area will be completed soon (1985). It is therefore desirable for Tanzania to link up with Burundi to meet traffic requirements in support of economic activities described below. The cost of the small section to bridge is minor in comparison with completed or ongoing installations of routes forming part of Tanzania's national trunk network.

Agreements of co-operation between Burundi and Tanzania likely to generate traffic demand on the planned route include:

- Air transport, under which Tanzania is obliged to provide communication facilities;
- Inland water transport on Lake Tanganyika.

It should also be noted that the ethnic affinity between Kigoma and Bujumbura areas is likely to generate business and social traffic on the link.

2. Cost

The total cost of the project amounts to $0.47 million, of which $0.35 million have to be financed externally to cover the hardware to be imported.

Project No. TEP-43-003

UNITED REPUBLIC OF TANZANIA: MICROWAVE LINK WITH MALAWI TANZANIA-MALAWI

I. Identification and summary

Origin of the project: Submitted by the Governments of Malawi and the United Republic of Tanzania

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Procurement and installation of microwave and multiplex equipment

Location: Mbeya and Mzuzu (Malawi)

Cost: $0.18 million

External financing required: $0.16 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Tanzania Posts and Telecommunications Corporation

Project management authority: Tanzania and Malawi Governments for their respective shares.

II. Description

1. Aim and objective

The aim of the project is to establish direct communications between the United Republic of Tanzania and Malawi to carry traffic between the two countries and beyond e.g., Kenya, Uganda and Ethiopia.

2. Nature and constituent parts

The project includes procurement and installation of microwave and multiplex equipment for the PANAFTEL link Kaluwe Hill (Mbeya) to Karonga Hill (Malawi). The route covers a distance of 140 km.

The microwave system should have a capacity of 960 channels and will be initially equipped with a few basic groups (detailed planning pending). It should also be capable of transmitting a PAL TV signal on the stand-by circuit. A route survey has already been done. Three microwave stations have to be equipped on the Tanzanian side and some terminal equipment has to be provided for Mbeya and a multiplex system to be placed in Dar-es-Salaam. The infrastructure situation is favourable. Two station buildings are available and the third one will be constructed in due course with local funds. Only two sites have to be provided with aerial supporting structures; at the third one the existing tower can be used.

III. Justification; economic analysis

1. Context and benefits

The implementation of the Dar-es-Salaam - Lusaka microwave trunk route (PANAFTEL) and the extension of the Malawi microwave backbone north towards the Tanzania border created pre-conditions in favour of linking 4 up the two networks.

The planned transit trunks will carry traffic not only between Malawi and Tanzania but also transit traffic from/to Kenya, Uganda and Ethiopia on the PANAFTEL network already in operation. Traffic generating activities include airlink operations, the intensified use the Lusaka - Dar-es-Salaam transit corridor by Malawi.

In addition Tanzania will exploit its link section for national trunk traffic between Mbeya and Tukuyu.

2. Cost

The total cost of the project for Tanzania amounts to $1.76 million, of which $1.60 million have to be financed externally.

Project No. TEP-43-004

UNITED REPUBLIC OF TANZANIA: MICROWAVE LINK WITH UGANDA
TANZANIA-UGANDA

I. Identification and summary

Origin of the project: Submitted by the Governments of Uganda and the United Republic of Tanzania

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature of the project: Procurement and installation of microwave and multiplex equipment

Location: Tanzania/Uganda (Bukoba - Masaka)

Cost: $0.45 million

External financing required: $0.42 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Tanzania Posts and Telecommunications Corporation

Project management authority:

II. Project description

1. Aim and objectives

The aim of the project is to link up the networks of Uganda and the United Republic of Tanzania and provide direct circuits for telephone and telex traffic presently routed via Kenya.

2. Nature and constituent parts

The planned link is part of the PANAFTEL network running from Bukoba to Masaka at a distance of 121 km. The project includes procurement and installation of microwave equipment for one terminal station and multiplex equipment for up to 180 channels (three super groups). A system capacity of 960 channels is required. The transit trunks will be extended to Dar-es-Salaam through the national microwave backbone already existing or nearing completion (1985). The system should also be able to carry a PAL TV signal on the stand-by circuit. A survey of the route between Bukoba and the border has already been conducted by ITU and was revised recently in preparation of the project.

III. Justification; economic analysis

1. Context and benefits

With the extension of the Tanzania national trunk network up to the Uganda border a link-up project with reasonable cost is within striking distance. The two countries have a long tradition of economic co-operation and Uganda transits part of its exports/imports through Tanzania. Since the East African Community is defunct, permanent efforts are made to web a new net of mutual agreements to promote and channel economic activities. Uganda and Tanzania are members of the Kagera Basin Organization (KBO).

A direct link between Tanzania and Uganda would provide efficient and economic telecommunications especially with respect to traffic in and out of the lake area (Lake Victoria) and the adjoining transport feeders important for transit trade.

It should also be taken into consideration that direct circuits will improve the revenue structure as a whole. The number of circuits in operation and historical traffic data indicate a favourable cost/benefit ratio of the planned investment. Lines of co-operation between Uganda and Tanzania likely to generate more trunk traffic demand include the following:

- Trade agreement (air, inland water and road transport, railway under negotiations);
- Cultural agreement.

2. Cost

The total cost of the project is estimated at $0.45 million, of which $0.42 million are required from external resources for funding of hardware including installation.

Project No. TEP-44-001

TOGO: REINFORCEMENT OF THE OUAGADOUGOU-LOME-COTONOU MICROWAVE LINKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Supply and installation of microwave, multiplex and power supply equipment

Location: Togo-Benin-Upper Volta

Cost: $2.50 million

External financing required: $2.50 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to extend the existing radio relay and multiplex equipment and replace the primary source of energy at the stations.

2. Nature and constituent parts

(a) Energy

Off-line source of energy from solar cells at the Tigbala and Degon stations which are difficult to reach in the rainy season. Power-900 watts, voltage-24 volts, Intensity-37 S.A.

(b) Multiplex

Lome-Cotonou: Five complete sets of basic group equipment and one BG filter.

Installation of pilot multiplex system on the link.

(c) Microwave

The Lama-Kara-Derong trunk requires the installation of an additional channel to carry TV signals to the Burth transmitter to be sited either at Bombouaka or at Deprong. With this, there will be total coverage of the country by television.

III. Justification; economic analysis

1. Context and benefits

- To improve the reliability of off-line sources of energy at relay stations;
- Automate to the maximum at the fastest possible rate the links between the three capital cities;
- To adapt the network equipment to the potential traffic which ought to flow freely;
- To avoid the establishment of a TV radio-relay network parallel to that of posts and telecommunications.

2. Cost

The estimated cost of the project is $2.50 million.

Project No. TEP-44-002

TOGO: ESTABLISHMENT OF COASTAL STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Study, supply and installation of equipment and training of operational and maintenance staff for the coastal station in Lome

Location: Lome

Cost: $0.80 million

External financing required: $0.80 million

Duration: One year

Desirable starting date: 1984

Project initiator:

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

This project is designed to modernize Togo's coastal station so as to provide permanent and quality service without neglecting its primary role of ensuring the safety of vessels at sea. This role extends to public communication by telephone, telegraph and telex and will help the port authorities to carry out their responsibilities.

2. Nature and constituent parts

This project comprises the study, supply and installation of transmitting equipment at the Togblekope transmission centre and reception at the Cacavelli receiving centre.

III. Justification; economic analysis

1. Context and benefits

In the field of maritime communications, the country's development has generated an increase in traffic at the port of Lome. There will be a further increase in this traffic, according to the Development Plan of Togo. Besides, the use of the port not only by land-locked countries with which Togo has signed agreements but also by Nigeria is another source of the increase in the movement of vessels.

The development of maritime traffic has not been reflected in the maritime radio-communication system in Lome up to now. To avoid congestion at the port and prolonged waiting periods by boats in the open sea at Lome, it is essential to modernize radio links between the port authorities and the vessels at sea before their arrival at port so that the movement of the various vessels can be regulated.

2. Cost

The cost of the project is estimated at $0.80 million.

Project No. TEP-44-003

TOGO: MODERNIZATION AND EXTENSION OF THE UNDERGROUND NETWORK OF EIGHT TOWNS IN THE PROVINCES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase and laying of feeder and distribution cables

Location: Atakpame, Sokode, Kara, Dorperong, Munga, Kpalime, Tsure and Aneho

Cost: $6.50 million

External financing required: $6.50 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to improve Togo's telephone exchange network.

2. Nature and constituent parts

The project will involve the purchase and laying of underground lines from the telephone exchange to the various sectors of the towns and for the delivery of service within these sectors.

III. Justification; economic analysis

1. Context and benefits

Existing telephone exchanges were put into service using an old network of only overhead lines. This system cannot be developed further. Hence the urgent need to lay underground cables capable of handling new and technical contingencies.

The eight towns referred to have Pentaconta Automatic Exchanges. There is therefore some need for a modern urban network that is capable of providing better quality service. In the light of future extension work on these exchanges and the number of applications for service pending, modernization and extension of the network is indispensable. Most of these towns have sizable populations which should create enough traffic to justify and make this project profitable.

2. Cost

The cost of the project is estimated at $6.50 million.

Project No. TEP-44-004

TOGO: STUDIES ON THE PURCHASE OF RURAL AUTOMATIC TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Technical studies and training of staff with a view to providing rural automatic exchanges

Location: All towns and divisional headquarters

Cost: $0.60 million

External financing required: $0.60 million

Duration: Six months

Desirable starting date: 1982

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to determine the country's needs for a rural automatic telephone exchange network.

2. Nature and constituent parts

The project will require technical assistance for a definitive study, the training of local staff and the purchase of the equipment needed.

The studies will take into consideration:

- A description of each network;
- Patterns in population growth and distribution;
- The number of subscribers;
- The number of route requests pending;
- The number of local and trunk calls;
- Intermediate and later stages;
- The analysis and the choices made.

The findings of the studies should attain the following objectives: Suggest modular exchanges or exchanges the capacity of which can be expanded and that will be installed in the various rural areas to be identified; they must fit harmoniously into the national network, keeping to the routing and numbering plan.

The exchanges suggested must be modular 1,000-line exchanges fitted with 200 to 400 lines.

III. Justification; economic analysis

1. Context and benefits

Since the organization of a national network is a complex problem, it will be necessary to conduct an in-depth analysis with the help of specialists in the area. This will minimize the risk of major changes being made later.

In order to give subscribers the best quality service, the Togolese Posts and Telecommunications Administration has launched an automatic exchange service programme in densely populated rural areas. Under this programme, buildings will be put up and automatic exchange equipment purchased and installed in rural areas.

2. Cost

The estimated cost of the project is $0.60 million.

Project No. TEP-44-005

TOGO: INCREASE IN THE CAPACITY OF TELEPHONE EXCHANGES IN SIX MAJOR TOWNS

I. Identification and summary:

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Increase in the capacity of telephone exchanges in six major towns

Location: Atakpame, Sokode, Lama-Kara, Aneho, Dapaong, Kpalime

Cost: $8.00 million

External financing required: $8.00 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

Based on work already done on existing exchanges, the aim of project is to:

- Expand the capacity of the monitoring elements to cope with trunk and international calls;
- Increase the number of directions so as to link them to other sector exchanges and hook the latter one to the other.

The Togolese Posts and Telecommunications Administration has undertaken to completely automate the major urban exchanges in the country in the medium and long terms.

2. Nature and constituent parts

(a) For Lama-Kara and Aneho: increase the number of lines from 200 to 1,000 of 1.2 erlangs with six 12-junction groups, a power station, four operator consoles, 15 manual junctions and a stand-by power generator;

(b) For Sokode and Atakpame: increase the number of lines from 250 to 1,000 with six groups, 72 junctions. Increase the number of monitoring elements, and therefore the number of manual junctions. Make adaptations in the power station and in operator's consoles.

III. Justification; economic analysis

1. Context and benefits

Aneho, Sokode, Atakpame, hama-Kara, Dapaong and Kpalime have grown so much that their equipment has become saturated and no longer meets increasing demand.

This project will therefore increase the capacity of the exchanges in these ~~four~~ six towns from 400 lines each to 1,000, especially in the case of Aneho and Lama-Kara.

These improvements will help meet the requests of applicant subscribers whose applications are pending, and also double revenue.

The implementation of this project will help improve the quality of service and make it possible to hook up other new exchanges to the national automatic exchange network.

2. Cost

The estimated cost of the project is $8.00 million.

Project No. TEP-44-006

TOGO: TRUNK LINKS BY RADIO-RELAY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Study, supply and installation of radio relay equipment

Location: Secondary towns

Cost: $8.00 million

External financing required: $8.00 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to improve service in some secondary towns by replacing the present overhead lines network with a highly reliable modern transmission system.

2. Nature and constituent parts

The system proposed will require a study, and the purchase and installation of a limited capacity (12-60 channels with telephone circuits) radio-relay network. Power for this equipment will be supplied from modern solar cells, etc.

Five networks will be created in five population centres, namely: Lome; Tserie, Kpalime; Sokode; Bassar, Bafilo, Tchamba, Sotoubana; Atakpame; Bodou, Amelene, Notse, Kpalime, Anie; Kara; Kante, Niamboujou Kpagsuta; Aneho; Tabligbo, Vogeur, Kpeme.

III. Justification; economic analysis

1. Context and benefits

Most of the secondary towns under consideration here are divisional headquarters with high population densities. The policy of integrated and harmonious development in urban and rural areas advocated by the Government requires that these population centres be provided with modern, efficient and reliable telecommunications facilities.

The new administrative and industrial units in these towns will increase the traffic, improving the profitability of individual automatic switching centres.

2. Cost

The estimated cost of the project is $8.00 million.

Project No. TEP-44-007

TOGO: PROJECT ON THE INTEGRATION OF THE RURAL ZONE: FIRST PART

I. Identification and summary

Origin of the project: Presented by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Integration of the rural zone for harmonious development

Location: Throughout the country

Cost: $11.00 million

External financing required: $11.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to connect agricultural and industrial production centres to the national network.

2. Nature and constituent parts

The project consists of:

- Construction of small capacity digital links to rural towns to the district capitals;
- Modernization and extension of local network;
- Purchase and installation of automatic exchanges in the rural towns.

III. Justification; economic analysis

1. Context and benefits

Togo's telecommunications network is limited mainly to the urban centres. The rural areas, which are centres for agricultural production are the mainstay of the country's economy, are neglected. The project will extend telecommunications service to the rural areas and should contribute towards opening up isolated rural areas.

2. Cost

The cost of the project is estimated at $11.00 million.

Project No. TEP-44-008

TOGO: INSTALLATION OF RADIO-TELEPHONE AND TELEGRAPH LINKS BETWEEN LOME AND 11 CENTRES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Study, supply and installation of emergency radiotelephone and telegraph infrastructure

Location: The entire national territory

Cost: $0.80 million

External financing required: $0.80 million

Duration: One year

Desirable starting date: 1984

Project initiator:

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The configuration of the national network is such that emergencies can be handled only by diversifying transmission methods.

The aim of the project is to make uninterrupted telecommunications service possible even in cases of difficulty in the main network.

2. Nature and constituent parts

The project consists of the installation of a radiotelephone and telegraph network between Lome and major centres in the country so as to maintain minimum telecommunication service in cases of interruption in the main network. The following centres will be linked to Lome: Dapaong (530 km), Mango (470 km), Niamtongou (400 km), Pya (385 km), Kare (370 km); Sokode (310 km), Badou (175 km), Atakpame (155 km), Kpalime (107 km), and Tobligbe (60 km).

Each link will have two telephone circuits and one telegraph link with gadgets for hookup with the network so as to have an interface between the two-wire telephone network and the radioelectric station. Provision will be made for the use of teleprinters on the telegraph link.

III. Justification; economic analysis

1. Context and benefits

The Togolese telecommunications network depends upon the major high capacity line of sight north-south microwave route. Any interruptions in this route cut off communication with the entire country.

The benefits to be derived from this project cannot be over-emphasized. First, the national network does not enjoy the advantages of a looped mesh which, in cases of interruption, makes continuous service possible through the deviation of traffic in the main route to an overflow circuit. This project will make this emergency feature possible. Since the minimum interruption time on the main network will be two hours, the installation of this link will bring in 5 to 80 per cent of lost revenue after the link has been established.

Second, during normal periods, this link will serve as an overflow link to balance inter-city traffic and avoid congestion during peak periods.

Third, transmission facilities will be diversified for permanent telecommunications service.

2. Cost

The estimated cost of the project is $0.80 million, which should be revised during the feasibility studies.

Project No. TEP-44-009

TOGO: INSTALLATION OF TELEPHONE LINKS WITH TOURIST CENTRES AND RESORTS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Purchase and installation of low-capacity mini-beam digital equipment

Location: Tourist areas within Togo

Cost: $1.00 million

External financing required: $1.00 million

Duration: One year

Desirable starting date: 1984

Project initiator:

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

This project is aimed at opening up areas located off main telecommunication routes and at linking such tourist centres as Fazao and Nabsulgou to Sokode and Kande.

2. Nature and constituent parts

The project calls for the purchase and installation of low-capacity mini-beam digital equipment.

III. Justification; economic analysis

1. Context and benefits

This project will not only open up some outlying production areas but will also link tourist centres such as Farao and Nabsulgou to Sokode and Kanre. It must be added that these tourist resorts are already equipped with very modern hotels. The continuing development of tourism in Togo fully justifies the implementation of this project.

Implementation of the project will enable the following tourist centres and resorts to be linked to the nearest mini-beam digital installations: Asie, Elauagnon, Kolokope, Dayes, Ndigue, Fazao, Nabsulgou, Mandauri and Gnanghoto.

2. Cost

The estimated cost of the project is $1.00 million.

Project No. TEP-44-010

TOGO: FREQUENCY CONTROL AND SYNCHRONIZATION CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Study, specification, construction and equipment of a frequency control and monitoring centre

Location: Lome

Cost: $3.00 million

External financing required: $3.00 million

Duration: Two years

Desirable starting date: 1984

Project initiator:

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to improve the management of the radio electrical system at the national and subregional level by modernizing the Lome frequency control and monitoring centre.

2. Nature and constituent parts

After studies have been conducted, the installation of the system to be proposed will take into account:

(a) Preparation of the site;
(b) Construction of a building;
(c) The various antennae;
(d) Measuring apparatus;
(e) Fixed and mobile radio-electric control equipment;
(f) Equipment for primary and secondary sources of power;
(g) Tools and vehicles.

Old and obsolete equipment at the existing centre need to be replaced.

III. Justification; economic analysis

1. Context and benefits

In order to improve the management of the numerous radio-electric links that exist at the national and subregional levels, accurate information must be available on the technical characteristics of such links (frequencies, quality, interference, co-ordination, frequency plans, etc.)

The best way to gather and process this information is to set up a broadcast control facility that will manage the radio-electric spectrum.

Its main function will be to control the technical features of broadcasts and to verify their compliance with the provisions of appropriate telecommunications regulations.

The Lome centre will make it possible to control broadcasts and to intervene in cases of interference. This will improve the management of the radio electrical spectrum both locally and subregionally. The centre will also help assign frequencies to new stations in the subregion, with the help of ITU (IFRB).

This centre will be equipped to carry out studies on the propagation of radio electric waves in the subregion where certain climatic phenomena are experienced especially between the months of December and January. These phenomena have negative effects on existing micro-wave links.

2. Cost

The estimated cost of the project is $3.00 million. The profitability of the project is not directly obvious, but the indirect benefits are enormous, and justify investments in the project.

Project No. TEP-44-011

TOGO: INTERNATIONAL TELEPHONE TRANSIT CENTRE

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications for a disadvant
disadvantaged country

Nature: Installation of a telephone transit centre

Location: Lome

Cost: $2.00 million

External financing required: $2.00 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to improve communications between Togo and the outside world by constructing an international automatic exchange which will provide direct international subscriber dialling facilities.

2. Nature and constituent parts

The project involves the purchase and installation of exchange equipment as well as the training of local personnel to maintain and operate the installed equipment.

III. Justification; economic analysis

1. Context and benefits

The construction of a satellite earth station has resulted in high international traffic which the present existing facilities are not able to cope with. In addition, due to increased economic activity between Togo and its neighbouring countries and completion of almost all of the PANAFTEL links between Togo and its neighbours, intra-African communication traffic has also increased tremendously. This has increased the congestion at the existing international exchange. A new exchange is therefore required to remove this bottleneck in international and intra-African communications.

2. Cost

The estimated cost of the project is $2.00 million.

Project No. TEP-44-013

TOGO: TELEPHONE EQUIPMENT FOR ROAD SECURITY

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of equipment

Location: Within the country

Cost: $1.60 million

External financing required: $1.60 million

Duration: One year

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The project is designed to provide communication facilities along the major trunk routes of the country. It should therefore improve safety of these routes by providing reliable communication in case of accidents or need.

2. Nature and constituent parts

The project consists of:

- Purchase and installation of equipment;
- Training of personnel to operate and maintain the installed equipment.

III. Justification; economic analysis

1. Context and benefits

The port of Lome is utilized by the land-locked countries of the Upper Volta and the Niger. The major trunk routes between Togo and these countries have a very high volume of traffic. There is, therefore, an urgent need to provide efficient and reliable communications facilities along them which can be used to summon help in the case of accidents and breakdowns. Such a system will improve the flow of traffic as well as increase the safety of the road. It should also indirectly contribute towards the economic wellbeing of the landlocked countries of the Upper Volta and the Niger by facilitating easy passage of their vehicles through Togo.

2. Cost

The estimated cost of the project is $1.60 million.

Project No. TEP-44-014

TOGO: COMPUTERIZATION OF THE MANAGEMENT OF POSTS AND TELECOMMUNICATIONS SERVICES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project fo**r** a disadvantaged country

Nature: Specify, supply, install and operate a computer system

Location: Lome

Cost: $1.42 million

External financing required: $1.42 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Administration

Project management authority: Posts and Telecommunications Administration

II. Description

1. Aim and objective

The aim of the project is to improve billing of telephones and other services through the introduction of a modern computer system. Such a system will also be used for the preparation of wages as well as storing of available data.

2. Nature and constitutent parts

The project comprises:

- Construction of a building for the equipment;
- Supply and installation of data processing and computer equipment;
- Training of local personnel to operate and maintain the installed system;
- Technical assistance to manage and operate the installed system during the project.

III. Justification; economic analysis

1. Context and benefits

The billings for telephone and telex calls, especially international calls, are considerably delayed because of the slow manual system which is at the moment used to process the bills. This has resulted in tremendous loss of revenue to the Administration. In addition, increasing traffic has made it imperative that a more efficient system should be installed. It is also expected that a data processing system once installed will be used for other management functions such as general accounting, filing and planning.

2. Cost

The cost of the project is estimated at $1.42 million.

Project No. TEP-46-001

UGANDA: DEVELOPMENT OF RURAL TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Installation of public call boxes in each of the districts in the country

Location: Throughout the country

Cost: $3.00 million

External financing required: $3.00 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The purpose of the project is to develop communication links with rural areas.

2. Nature and constituent parts

The project mainly comprises the installation of public call boxes (PCB) in all the 126 districts in the country.

A rural network using appropriate technologies will be superimposed on the existing or projected infrastructures (transmission network, local exchanges).

The implementation of the project will start with rural telecommunications general planning.

III. Justification; economic analysis

1. Context and benefits

In order to accelerate the development of agriculture which is the main source of income in the country, the Government decided to develop communications infrastructure in rural areas.

The project is the most rapid means of improving communications with rural areas.

It will contribute to the reconstruction of the country by facilitating the running of businesses and society.

2. Cost

The total cost of the project is estimated at $3 million. Neither the construction of buildings nor significant civil engineering work is envisaged.

Project No. TEP-46-002

UGANDA: JINJA-TORORO-GULU TRUNK ROUTE AND TELEPHONE EXCHANGES

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction of a high capacity radio-relay link and new telephone exchanges in five localities

Location: Along the Jinja-Tororo-Gulu route with exchanges at Towno, Mbale, Soroti, Lira and Gulu

Cost: $10.14 million

External financing required: $10.14 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Post and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The purpose of the project is to improve the telephone network in the north of the country in order to meet demand.

2. Nature and constituent parts

The project comprises:

- The installation of a high-capacity radio-relay link of 960 channels, to replace the low capacity Jinja-Gulu UHF link;
- The installation of new telephone exchanges with a total capacity of 8,000 lines along the distance covered by the radio-relay system (Towno, Mbale, Soroti, Lira and Gulu);
- Assistance to the telecommunications administration to make the best out of the project: technical assistance for planning, management of services, and training of personnel.

III. Justification; economic analysis

1. Context and benefits

The national telecommunications network in the north of the country is made up of the following:

- Excluding the Kampala-Jinja SHF link, low-capacity lines, or VHF routes of a maximum capacity of 120 channels (Jinja-Towno);
- Telephone exchanges that are either old (Towno and Soroti), damaged (Lira), saturated (Mbale) or manual (Gulu); consequently, the installation of technical facilities which will make it possible to meet the demand for telecommunications services is indispensable.

2. Cost

The total cost of the project is estimated at $10.14 million. ADB has been approached.

The project concept is being reviewed and new plans consider needs of Uganda Railways. Total cost may change considerably for the joint project as compared to the present figures.

Project No. TEP-46-003

UGANDA: KAMPALA-MASAKA-MBARARA RADIO-RELAY LINK

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of a radio-relay link Kampala-Masaka-Mbarara

Location: Over the distance covered by the radio-relay system

Cost: $4.80 million

External financing required: $2.50 million

Duration: Two years

Desirable starting date: 1983

Project initiator: Posts and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corpora

II. Description

1. Aim and objective

The purpose of the project is to build a high-capacity Kampala-Masaka-Mbarara link, taking traffic forecasts into consideration.

2. Nature and constituent parts

The project comprises the installation of a high-capacity radio-relay system of 960 channels, to replace the former UHF system which was destroyed.

III. Justification; economic analysis

1. Context and benefits

The Kampala-Masaka-Mbarara UHF link was destroyed during the dramatic events which took place in Uganda during the last few years. UNDP has accepted to finance the rehabilitation of the link and the construction of an SHF link which will take into account national traffic estimates and estimates of traffic with neighbouring countries. However, the funds presently on hand are not sufficient for the implementation of the project. The remainder of the amount needed to finance the project must now be found.

The project will contribute to the reconstruction of the Ugandan economy by facilitating the running of businesses and society.

Moreover, it forms an important portion of the PANAFTEL network linking Uganda to Rwanda, Burundi and Zaire via Mbarara-Kabele-Kigali on the one hand and Uganda to the United Republic of Tanzania via Masaka-Kyebe-Bukoba on the other.

2. Cost

The total cost of the project is $4.80 million. UNDP has already provided $2.30 million. The remaining amount must now be found.

Project No. TEP-47-001

THE UPPER VOLTA: INTRODUCTION OF AUTOMATIC TELEPHONE SYSTEM IN FIVE TOWNS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction and equipment of telephone exchanges

Location: Kaya, Dori, Gaona, Diebougou, Koupela

Cost: $2.10 million

External financing required: $2.10 million

Duration: Two years

Desirable starting date: 1980

Project initiator: Posts and Telecommunications Office

Project management authority:

Observations: This is part of the project submitted to the French Government for financing for which a total amount of $10.769 million has been secured. Work was expected to be completed before the end of 1983.

Project No. TEP-47-002

THE UPPER VOLTA: CONSTRUCTION OF AN AUTOMATIC TELEPHONE EXCHANGE AND ITS ASSOCIATED LOCAL NETWORK AT PO

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction of automatic exchange and its associated local network

Location: Po

Cost: $0.63 million

External financing required: $0.63 million

Duration: 18 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The aim of the project is to provide automatic telephone service at Po and, together with the proposed microwave link between Ouagadougou (Upper Volta) and Bolgatanga (Ghana), will interconnect the town to the national automatic switching network.

2. Nature and constituent parts

The project consists of supply and installation of a 300-line automatic exchange and the construction of a local network involving underground cables and overhead wires.

III. Justification; economic analysis

1. Context and benefits

Po, an important trade and customs port near the Ghana border, lies on the proposed microwave route between Ghana and the Upper Volta. Provisions have been made on this link for drop/insertion facilities which will interconnect the town to the national automatic long-distance subscribers dialling system if an automatic exchange is built there. The project is therefore complementary to the Upper Volta-Ghana (PANAFTEL) microwave link.

Situated in the middle of the national park, Po is also the centre of the country's growing tourist industry. The establishment of good telephone communication facilities in the town should promote the tourist industry and enhance its position as the centre of trade with Ghana; it should also have a positive social impact on the people of that area by opening up that part of the country.

2. Cost

The estimated cost of the project is $0.63 million.

The project is part of the ECOWAS telecommunications programme and source of finance for the project has been identified. Evaluation of the tender bids is in progress.

Project No. TEP-47-003

UPPER VOLTA: PROVISION OF LOCAL EXCHANGE EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Construction of automatic exchange and its associated local network

Location: Orodara

Cost: $0.21 million

External financing required: $0.21 million

Duration: 16 months

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority:

II. Description

1. Aim and objective

The aim of the project is to open up the western border areas of the country by extending automatic telephone facilities to Orodara.

2. Nature and constituent parts

The project comprises the provision of equipment for an automatic exchange with 100 subscriber lines and its installation. It also involves the construction of the local network.

III. Justification; economic analysis

1. Context and benefits

Orodara, an important trading post on the border with Mali as well as one of the main centres for agricultural production in the country, also lies on the PANAFTEL microwave route between Bamako (Mali) and Ouagadougou (Upper Volta). Provision has been made on this route to drop some telephone channels in the town. An automatic exchange if constructed here will be easily connected to the national long-distance subscriber dialling system.

The provision of automatic exchange for Orodara will interconnect the town to the switching network of the country and it should be easy for subscribers in the town to be contacted from all the important towns in the country. This area of the country will be opened up and this should promote the town's border trade and agricultural production.

2. Cost

The estimated cost of the project is $0.21 million.

The project also forms part of the ECOWAS telecommunication development programme for the region. Source of finance has been identified and tenders for the project are being evaluated.

Project No. TEP-47-004

UPPER VOLTA: MICROWAVE TRANSMISSION LINK BETWEEN FADA N'GOURMA-PANA AND NATITINGOU (BENIN)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Supply and installation of microwave equipment

Location: Upper Volta, Benin

Cost: $0.91 million

External financing required: $0.91 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The aim of the project is to construct a high-capacity radio link between the Upper Volta and Benin, and thereby provide good and reliable communications between these countries as well as open up their two border areas.

2. Nature and constituent parts

The project consists of supply and installation of radio relay microwave equipment and associated multiplex, tower, antennae and power supply equipment. The 220-km link will connect Fada N'Gourma and Pana in the Upper Volta to Porga and Natitingou in Benin.

III. Justification; economic analysis

1. Context and benefits

There is no direct link between the Upper Volta and Benin. At the moment, traffic between these two countries is routed through Lome on the Ouagadougou-Lomé-Cotonou link, which has proved unrealiable. However, in spite of this fact, traffic between the Upper Volta and Benin has grown at an average annual rate of 25 per cent, increasing from 749 charged minutes in 1977 to 5,701 charged minutes in 1980.

The eastern part of the country bordering on Benin lacks adequate communication facilities. The need to provide this area with modern communication facilities is accentuated by the proposed plan to build a hydroelectric dam at Kompienga, 18 miles from Porga, a sub-terminal station on this link.

The provision of direct link between the Upper Volta and Benin should facilitate as well as promote the livestock trade between the two countries. It should also promote regional co-operation.

On the national level it should promote the efficient management of the agricultural and industrial activities which will be created by the construction of the dam.

2. Cost

The cost of the project is estimated at $0.91 million.

This project forms part of the ECOWAS telecommunications development programme for the region.

Project No. TEP-47-005

UPPER VOLTA: EXTENSION OF THE TELEPHONE EXCHANGE AND LOCAL NETWORK OF FADA N'GOURMA

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of switching equipment, outside plant and power supply

Location: Fada N'Gourma

Cost: $0.87 million

External financing required: $0.87 million

Duration: One year

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

The Fada N'Gourma exchange is the group centre for the eastern part of the country. It is therefore responsible for routing calls to and from all the small exchanges in this region. The extensions will enable the exchange to route transit calls more effectively and serve more subscribers.

2. Nature and constituent parts

The project consists of extensions to four main areas:

- Switching system;
- Aerial and underground network;
- Interurban junctors;
- Secondary power system (Rectifiers).

III. Justification; economic analysis

1. Context and benefits

The exchange at Fada N'Gourma, the capital of the eastern district, was installed in 1977 with an initial capacity of 192 lines. The growth in number of subscribers connected to the exchange has been phenomenal, increasing from 37 in 1977 to 118 in 1981, due to increased economic activity, favourable development activity such as a first-class road between Koupela and Fada N'Gourma (which should increase trade between the two towns) and the Government's decentralization policy. It is envisaged that by 1983 the installed capacity will be saturated and it is therefore proposed to extend the exchange to 600 lines to enable it to meet traffic requirements up to 1989. The external plan network of the town will also be extended and re-arranged to enable subscribers in previously neglected areas to be served.

The PANAFTEL link to the Niger and proposed Diapaga-Arly link will provide high-grade circuits to a number of towns in the district; for example Kantchari, Diapaga and Arly where it is proposed to construct 100-line exchanges. The routing and transiting facilities at Fada N'Gourma must therefore be augmented through the provision of appropriate junctors.

The power supply at the exchange is a single 100 amps rectifier. The lack of redundancy in such a vital system has greatly affected the over-all performance of the exchange. A second stand-by 100 amps rectifier will be provided to improve the reliability of the system.

The extension to the exchange at Fada N'Gourma will permit the Posts and Telecommunications Office to satisfy the demand for telephone facilities in the town. It will also improve the transit facilities for the local exchanges in the eastern district. This should result in better communication between the towns in the district and with the country as a whole.

2. Cost

The total cost of the project is estimated at $0.87 million.

Project No. TEP-47-006

UPPER VOLTA: INSTALLATION OF TELEPHONE CHANNELLING EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project for a disadvantaged country

Nature: Supply and installation of drop/insertion and multiplex equipment

Location: Orodara and Kantchari

Cost: $0.80 million

External financing required: None

Duration: One year

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Office

Project management authority: Posts and Telecommunications Office

II. Description

1. Aim and objective

It is proposed to build exchanges at Orodara and Kantchari, two towns which link on the PANAFTEL transmission route from Mali through the Upper Volta to the Niger. The aim of this project is to connect these exchanges to the national network through the provision of drop/insertion facilities at Orodara and Kantchari.

2. Nature and constituent parts

The project consists of the supply and installation of drop/insertion and multiplex equipment and training of personnel.

III. Justification; economic analysis

1. Context and benefits

Orodara and Kantchari, important towns on the Mali and the Niger borders, serve as trading posts for border trade and are also very important agricultural centres. These towns are at the moment served by manual boards which are inadequate and cannot meet their traffic demands. It is therefore proposed to build two exchanges, one at Orodara under the ECOWAS telecommunications development programme and the other at Kantchari.

The interconnexion of the exchanges at Orodara and Kantchari to the national network should provide good and reliable communications to these towns and should break their isolation. It should be noted here that opening up of the country is one of the major development policies of the Government. Good communication facilities should also promote the bustling border trade.

2. Cost

The total cost of the project is estimated at $0.80 million.

Project No. TEP-48-001

ZAIRE: REHABILITATION AND EXTENSION OF THE TELEPHONE AND TELEX SWITCHING SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector : Telecommunications

Order of priority: National project

Nature: Rehabilitation and extension of the existing telephone and telex switching system

Location: Zaire

Cost: $12.53 million

External financing required: $12.53 million

Duration: Five years

Desirable starting date: 1983

Project initiator :: National Posts and Telecommunications Office (ONPTZ)

Project management authority: National Posts and Telecommunications Office (ONPTZ)

II. Description

1. Aim and objective

The purpose of the project is to supply spare parts and repair all existing exchanges and extend or construct additional telephone and telex exchanges.

2. Nature and constituent parts

The project comprises the purchase of spare parts and the repair of all exchanges. Where necessary, the capacity of the existing exchanges will be extended and additional exchanges to meet the five-year demand requirements of the country will be constructed.

III. Justification; economic analysis

1. Context and benefits

The present telex and telephone exchanges are in poor repair. The exchanges do not function properly due to lack of spares and maintenance. The capacity of most of them is exhausted and they are extremely congested. The rehabilitation and repair, and the extension of existing exchanges will greatly improve the quality of telecommunications service.

2. Cost

The cost of the project is estimated at $12.53 million. Approzimately $7 million of the total has been secured through French and Belgian assistance.

Project No. TEP-48-002

ZAIRE: REHABILITATION AND EXTENSION OF LOCAL URBAN NETWORKS

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Rehabilitation and extension of the existing urban networks

Location: Zaire

Cost: $24.30 million

External financing required: $24.30 million

Duration: Five years

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office (ONPTZ

Project management authority: National Posts and Telecommunications (
(ONPTZ)

II. Description

1. Aim and objective

The local networks in Zaire are in extremely poor condition. Communication is difficult and service interruptions are common. The objective of the project is to correct this situation and provide additional network to meet growth requirements over the next five years.

2. Nature and constituent parts

The project involves the purchase of cables, tools and instruments to maintain the existing cables and specifications, purchase and installation of additional cable.

III. Justification; economic analysis

1. Context and benefits

The quality of telephone service is very poor. The primary cause for the situation is the cable network in the urban areas. This project will correct this situation and provide additional network to serve subscriber demand in the next five years.

2. Cost

The cost of the project is estimated at $24.30 million, of which $10.87 million is for rehabilitation.

Project No. TEP-48-003

ZAIRE: REHABILITATION AND EXTENSION OF NATIONAL TRANSMISSION SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Purchase of spare parts, tools, instruments and vehicles to maintain the existing transmission system, and construction of additional transmission plant to meet short-term needs

Location: Zaire

Cost: $13.00 million

External financing required: $13.00 million

Duration: Five years

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office (ONPTZ)

Project management authority: National Posts and Telecommunications Office (ONPTZ)

II. Description

1. Aim and objective

The objective of the project is to rehabilitate the existing plant and to extend the transmission system to meet the short-term needs of the country.

2. Nature and constituent parts

The project involves:

- Purchase of spare parts, tools, instruments and maintenance vehicles to maintain the existing systems;
- Specification, purchase and installation of additional transmission equipment together with all ancillaries.

III. Justification; economic analysis

1. Context and benefits

The present transmission plant is in poor condition and requires extensive repair. Continued expansion of the service to meet subscriber needs requires extension of the transmission plant.

2. Cost

The cost of the project is estimated at $13.00 million, of which $5.00 million is for rehabilitation.

Project No. TEP-48-004

ZAIRE: REHABILITATION OF POWER SUPPLY SYSTEM

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Rehabilitation or replacement of the power supply systems at various repeater stations and exchanges

Location: Zaire

Cost: $6.67 million

External financing required: $6.67 million

Duration: Five years

Desirable starting date: 1984

Project initiator: National Posts and Telecommunications Office (ONPTZ)

Project management authority: National Posts and Telecommunications Office (ONPTZ)

II. Description

1. Aim and objective

The power supply system is of two catagories: (a) primary source of power for all remote repeater stations, (b) stand-by power source for places where there is a power supply such as telephone exchanges. To guarantee the continuity of service, there should be reliable sources of energy. The objective is to meet these requirements.

2. Nature and constituent parts

The project involves the repair or replacement as required of all the primary and stand-by power supply systems for telecommunications.

III. Justification; economic analysis

1. Context and benefits

One of the causes for malfunctioning of the telecommunications system in the country is power interruption. The primary and stand-by power supply systems have to be rehabilitated or changed.

2. Cost

The cost of the project is estimated at $6.67 million, of which $5.50 million in foreign currency.

Project No. TEP-49-001

ZAMBIA: EXTENSION OF SATELLITE EARTH STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Provision of a second antenna, working with Atlantic Ocean Satellite earth station

Location: Mwembashi (Lusaka)

Cost: $14.40 million

External financing required: $14.40 million

Duration: Two years

Desirable starting date: 1985

Project initiator: Posts and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The oobjective of the project is to improve and expand international services.

2. Nature and constituent parts

The main parts of the project are:

- Project evaluation and technical specification;
- Procurement of equipment, civil works, installation and commissioning;
- Training of personnel for operations and maintenance.

III. Justification; economic analysis

1. Context and benefits

Extension of the Satellite Earth Station by providing a second antenna working to Atlantic Ocean would enable Zambia to set up direct links as traffic justifies with the USA, Canada and other American countries having earth stations working to Atlantic Ocean.

It will make Zambia suited to be an international communication centre for southern Africa.

The estimated revenue for the first three years after commissioning is $15.00 million.

2. Cost

The total cost of the project is estimated at $14.40 million.

IV. Status

Feasibility study has been completed which presents the project economically viable. Technical specifications is ready. Course for external financing is required.

Project No. TEP-49-002

ZAMBIA: RADIO MONITORING STATION

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project

Nature: Construction and equipment of radio monitoring station

Location: Copperbelt province

Cost: $1.89 million

External financing required: $1.89 million

Duration: One year

Desirable starting date: 1986

Project initiator: Posts and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The aim of the project is to enable Zambia to establish radio monitoring services by setting up a monitoring station at Ndola.

2. Nature and constituent parts

The project includes:

- Construction of a monitoring building;
- Supply and installation of equipment;
- Training of personnel for operations and maintenance.

III. Justification; economic analysis

1. Context and benefits

A radio monitoring station in the country is necessary in order to check and control and/or reduce illegal harmful transmission whether eminating internally or externally. It is planned to install a fixed monitoring station building with monitoring equipment at Ndola.

2. Cost

The cost of the project is estimated at $1.89 million.

Technical specifications for the project have been prepared.

Project No. TEP-50-001

ZIMBABWE: INSTALLATION OF A STANDARD "A" EARTH STATION (INTELSAT STANDARD)

I. Identification and summary

Origin of the project: Submitted by the Government

Sub-sector: Telecommunications

Order of priority: National project with regional implications

Nature: Construction and putting into operation of a Standard "A" Earth Station

Location: Near Harare

Cost: $12.60 million

External financing required: $12.60 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Posts and Telecommunications Corporation

Project management authority: Posts and Telecommunications Corporation

II. Description

1. Aim and objective

The purpose of the project is to set up the technical infrastructure necessary to cope with international and intra-African telecommunications traffic.

2. Nature and constituent parts

The major components of the project are:

- An evaluation of the project;
- Invitations to tender, delivery of equipment, construction of buildings, civil engineering works;
- Installation of the Earth Station and the terminal radio-relay link, putting into operation of the facilities;
- Training of personnel.

The estimated capacity of the station in 1984 is 156 FM/FDM and 24 SCPC circuits and 268 FM/FDM and 32 SCPC circuits in 1988.

III. Justification; economic cnalysis

1. Context and benefits

The transmission channels of the international telecommunications network of Zimbabwe consist of satellite circuits with other countries.

The satellite circuits use the Earth Station in Johannesburg, via the 300-channel Harare-Johannesburg radio-relay link. The circuits will increase from the present number of 31 to 156 in 1984 and to 283 in 1988.

The Johannesburg Earth Station will no longer be used.

The project will provide the country with the means of communication necessary for the development of its international exchanges.

The project is economically viable.

2. Cost

The total estimated cost of the project is $12.6 million, broken down as follows:

	In million $
Earth station	8.33
Terrestrial radio-relay system	1.39
Civil engineering	2.78
Training	0.10
Total	12.60

Project No. TEP-60-001

IMPLEMENTATION OF PANAFTEL PROJECT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Installation of telephone and telex circuits

Location: Regional

Cost: (a) $159.247 million priority 1; (b) $48.523 million priority 2

External financing required: $207.77 million

Duration: Ten years

Desirable starting date: 1979

Project initiator: International Telecommunication Union

Project management authority:

II. Description

1. Aim and objective

The main objective of the PANAFTEL network is the installation of reliable telecommunications systems to facilitate the establishment of high-quality telephone and telex systems between two African countries without the need to go through centres outside Africa.

2. Nature and constituent parts

The project consists of installing telecommunications systems comprising international automatic-switching telephone and telex centres supported by high-quality tran mission routes consisting of radio relay systems.

III. Justification: economic analysis

1. Context and benefits

The PANAFTEL network will make it possible to deal with substantial public service traffic and also that of civil aviation, meteorological services, maritime services and press agencies.

2. Cost

The estimate for the 19,635 km PANAFTEL routes already studies is $207.77 million.

Project No. TEP-60-002

PAN-AFRICAN TELECOMMUNICATION NETWORK (PANAFTEL) PROJECT: PHASE II: SURVEY OF ADDITIONAL ROUTES

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Surveys of additional routes for the PANAFTEL project

Location: Regional

Cost: $3.50 million

External financing required: $3.50 million

Duration: Four years

Desirable starting date: 1979

Project initiator: International Telecommunication Union

Project management authority:

Observations: To facilitate the development of the PANAFTEL project, it is essential to study the routes which are next to be established. With this in mind, consideration should be given to making pre-investment surveys for the routes defined by national telecommunication organizations.

II. PANAFTEL routes transferred from Phase I to Phase II

Project TEP-II-01

Project No.01		Route	km	Cost X$ 1,000	Comments
1.	Tete (MOZ)	-Katete (ZAM)	287	1,050	SADCC
2.	Nampula (MOZ)	-Mtwara (MLW)	571	2,474	SADCC
3.	Chingola (ZAM)	-Lubmubashi (ZAI)	109	693	SADCC
4.	Segou (MLI)	-Mopti (MLI)	320	1,500	
5.	Bamako (MLI)	-Siguiri (GUI)	195	522	
6.	Siguiri (GUI)	-Kankan (GUI)	123		
7.	Mali (GUI)	-Tambacounda (SEN)	263	948	
8.	Atar (MAU)	-Akjouit(MAU)	220	1,500	
9.	Aquetot (MAU)	-Choum (MAU)	77	240	
10.	Juba (SUD)	-Kitale (KEN)	700	na	
11.	Juba (SUD)	-Kampala (UGA)	390	na	
12.	Cabinda (ANG)	-Pointe Noire (PRC)	150	na	
13.	Ouagadougou (UPV)	-Bolgatanga (GHA)	190	1,346	ECOWAS
14.	Bakounda (GAB)	-Makabena (PRC)	230		
15.	Zinder-Gure	-Diffa (NER)	400		
16.	Bissau (GBS)	-Boke (GUI)	180		
17.	Bissau (GBS)	-Zinguinchor (SEN)	120		
18.	Kampala Mbarara (UGA)	-Goma (ZAI)	480		
19.	Nouakchott (MAU)	-Selibabi (MAU)	340	3,320	ECOWAS
20.	Kedougou (SEN)	-Mali (GUI)	50	535	ECOWAS
21.	Zinguinchor (SEN)	-Banjul (GAM)	124	1,000	ECOWAS
22.	Piche (GBS)	-Koundoura (GUI)	100		ECOWAS
23.	Sokoto (NIR)	-Birni N'Konni (NER)	90	529	ECOWAS
24.	Accra (GHA)	-Bolgatanga (GHA)	840	28,410	JAPAN AND GHANA
25.	Beira (MOZ)	-Tete (MOZ)	400	7,800	SADCC
26.	Beira (MOZ)	-Nampula (MOZ)	800	16,500	SADCC
27.	Beira (MOZ)	-Maputo (MOZ)	1000	21,750	SADCC
28.	Mt. Xiluvo (MOZ)	-Umtali (ZIM)	120	2,700	SADCC
29.	Bulawayo (ZIM)	-Francistown (BOT)	200	1,150	SADCC
30.	Bulawayo (ZIM)	-Livingstone (ZAM)	350	5,700	SADCC

Phase I projects (TEP 02) to be surveyed and implemented in Phase II

Project No. 02		Route	km	Surveyed cost $	Remarks
31.	Hargeisha (SOM)	-Mogadischio (SOM)	1300	390,000	
32.	Kalabe (ZAM)	-Angola (ANG)	180	54,000	
33.	Luanda (ANG)	-Kinshasa (ZAI)	530	159,000	
34.	Kigoma (ZAI)	-Kalemie (ZAI)	140	42,000	
35.	Kribi (CMR)	-Bata (EQG)	120	36,000	
36.	Bata (EQG)	-Libreville (GAB)	170	51,000	

Project No. TEP-60-003

RURAL TELECOMMUNICATIONS: SURVEY

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Survey on telecommunications in rural areas

Location: Region

Cost: $0.70 million

External financing required: $0.70 million

Duration: One year

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: The establishment of telecommunication networks is of vital importance for overcoming the economic and social geographical isolation of rural areas and enabling them to participate actively in the general development of the country. (The proposed survey is aimed at making an inventory of telecommunications installations and other infrastructures in rural areas with a view to identifying the requirements and the standards to be reached for their inclusion in a long-term plan) 24 man/months.

Best copy available

Project No. TEP-60-004

RURAL TELECOMMUNICATIONS: PILOT PROJECTS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Carrying out of rural telecommunication pilot projects

Location : To be decided

Cost: $1.34 million

External financing required: $1.34 million

Duration:

Desirable starting date: 1984

Project initiator: International Telecommunication Union

Project management authority:

Observations: The establishment of telecommunication networks for rural areas is of vital importance for rural development. The project submitted is aimed at the carrying out of rural telecommunication pilot projects with a view to testing the available technology and identifying the obstacles encountered from a logistical and maintenance point of view. The results will make it possible to develop an adequate organization for the functioning and maintenance of rural networks; 34 man/months will be required for carrying out the project.

Project No. TEP-60-005

FEASIBILITY STUDY: MANUFACTURING AND RESEARCH

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Feasibility study

Location:

Cost: $1.50 million

External financing required: $1.50 million

Duration: One year

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: In order to reduce Africa's dependence on outside countries it is proposed to undertake a feasibility study on the manufacture of a number of already listed articles.

In order to attain this objective during the second phase of the Decade, feasibility studies should be undertaken on a subregional basis.

Project No. TEP-60-006

STUDY ON JOINT UTILIZATION OF SATELLITE COMMUNICATION EARTH STATION FACILITIES FOR COMMON-CARRIER COMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the governments

Subsector: Telecommunications

Order of priority: Regional project

Nature: Study on joint utilization of satellite communication earth station facilities for common-carrier communications

Location: To be decided

Cost: $0.60 million

External financing required: $0.60 million

Duration:

Desirable starting date: 1984

Project initiator: ITU/PATU

Project management authority:

Observations: While there are no plans at present for launching an African satellite, African countries should explore all the existing satellite communication facilities for dealing with present traffice.

Project No. TEP-60-007

SURVEY AND EVALUATION OF ORGANIZATIONAL ARRANGEMENTS AND PROMOTION OF MANAGEMENT EFFICIENCY

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Surveys and studies

Location:

Cost: $0.50 million

External financing required: $0.50 million

Duration: One year

Desirable starting date: 1984

Project initiator: ITU

Project management authority:

Observations: One of the objectives established for the Decade is the early achievement of a satisfactory level of management and improved administration of telecommunication systems and services. In order to achieve this objective, it is necessary to make an over-all survey on the management of all African telecommunication organizations. The survey will relate in particular to assessing and evaluating the functioning of the organizations, with a view to identifying the problems met with in each of the administrative operations; lastly, a reasonable reorganization will be proposed with a view to meeting the needs and requirements of the service in the near future. The total cost of the project covers the provision of experts for 36 man/months.

Project No. TEP-60-008

DIRECT ASSISTANCE TO COUNTRIES FOR THE INTRODUCTION OF MAINTENANCE PROCEDURE

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Experts assistance for each sector in each country

Location: All countries

Cost: $3 million

External financing required: $3 million

Duration:

Desirable starting date: 1980

Project initiator: ITU

Project management authority:

Observations: For achieving the objective of the Decade, the project proposes the selection in each country of a pilot centre in the four main sectors (transmission, switching, power and local networks). The centres selected will also have the responsibility of distributing to other centres the knowledge, methodology and expertise acquired. For the implementation of this project, the various centres will have to be given, an average, three months' specialist service for each technical sector, or a total of 600 man/months.

Project No. TEP-60-009

ASSISTANCE AND PROVISION OF EXPERTISE FOR TELECOMMUNICATION SECTORAL DEVELOPMENT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Technical assistance

Location: To be decided

Cost: $2.15 million

External financing required: $2.15 million

Duration: One year

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: For the rapid attainment of a satisfactory level of management and improved administration of telecommunication systems and services, it is necessary to prepare a standardization of job and wage classifications, job descriptions, duties and responsibilities for all categories of staff. The project submitted is aimed at giving the necessary technical assistance: 36 man/months.

Project No. TEP-60-010

PROVISION OF ASSISTANCE IN PLANNING TO A NUMBER OF COUNTRIES

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Technical assistance in planning

Location:

Cost: $0.49 million

External financing required : $0.49 million

Duration: One year

Desirable starting date: 1980

Project initiator: ECA/ITU

Project management authority:

Observations: To enable national telecommunication services in Africa to satisfy growing demand, assistance must be given to them in preparing base plans for directing their development programmes.

The project submitted is aimed at providing countries which so require with technical assistance in planning methodology. When the national telecommunication services have prepared a base plan, assistance will be provided to help them to review, amend and improve it as necessary to meet the requirements of the Decade.

Project No. TEP-60-011

ASSISTANCE IN REORGANIZATION AND PROVISION OF EXPERTISE IN MANAGEMENT AND ORGANIZATIONAL METHODOLOGY

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Technical assistance in management

Location: To be decided

Cost: $0.50 million

External financing required: $0.50 million

Duration: One year

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: To improve telecommunication management and enable telecommunications to contribute to development, technical assistance is required for a number of countries.

The assistance will be at the level of management and organizational methodology. The project provides for expert services of 50 man/months.

Project No. TEP-60-012

OPERATION AND MAINTENANCE: BASIC STUDIES AND COURSES FOR SENIOR STAFF

I. Identification and summary

Origin of the project: Submitted by the Governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Basic studies, courses and seminars for senior staff

Location: Regions and subregions

Cost: $0.58 million

External financing required: $0.58 million

Duration: Four years

Desirable starting date: 1984

Project initiator: ITU/ECA

Project management authority:

Observations: One of the objectives of the Decade is the development of operational and maintenance services in all countries: organization, structures, procedures, staff and equipment.

The project is aimed at attaining this objective through basic studies, courses and seminars for senior personnel, in accordance with the following requirements:

	In million $
Standard organizational charts for operational and maintenance services, together with a study on the necessary staff: 30 man/months	0.15
Studies on quality of service and productivity: 12 man/months	0.06
Development of standard maintenance procedures for the main technical sectors: transmission, switching, power, local networks, measuring apparatus, etc.: 54 man/months	0.27
Estimate and management of stock for logistic support: 6 man/months	0.03
Standard operational and maintenance budgets by type of service and by subscriber: 8 man/months	0.04
Contingencies	0.03
Total	0.58

Project No. TEP-60-013

FELLOWSHIPS FOR TRAINING IN TELECOMMUNICATIONS DEVELOPMENT PLANNING

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Financing of fellowships

Location: Subregions

Cost: $0.60 million

External financing required: $0.60 million

Duration: Two years

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: The project consists of obtaining fellowships to enable the various countries to send their staff for training in telecommunications development planning: 50 students x 2 months x 6 subregions - 600 man/months at a cost of $0.60 million.

Project No. TEP-60-014

ESTABLISHMENT AND IMPROVEMENT OF REGIONAL PRIMARY SYNCHRONIZING AND FREQUENCY MONITORING CENTRES

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional/subregional project

Nature: Study and establishment of a primary introduction (buildings and sites) and fixed and mobile radio electric equipment
Location: Nairobi
Cost: $5.00 million

External financing required: $5 million

Duration: Two years

Desirable starting date: 1984

Project initiator: Kenya/ITU

Project management authority:

Observations: In order to meet the communication needs of industry and agriculture, the African countries have had to assign radioelectric frequencies to a fairly large number of services and individuals. To prevent users from jamming neighbouring countries or making pirate broadcasts not in accordance with the requirements for which the frequencies were requested, it is essential to establish a regional monitoring centre. The estimate submitted comprises the establishment of a primary infrastructure (buildings and sited) and fixed mobile radioelectric equipment for two centres.

Project No. TEP-60-015

STUDY FOR THE ESTABLISHMENT OF SUBREGIONAL MARITIME RADIO TRANSMISSION CENTRES

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Study for the establishment of maritime radio transmission centres centres

Location: To be decided

Cost: $0.06 million

External financing required: $0.06 million

Duration: Six months

Desirable starting date: 1984

Project initiator: ITU/ECA

Project management authority:

Project No. TEP-60-016

EAST AFRICAN (INCLUDING ISLAND COUNTRIES) SUBMARINE CABLE LINKS AND POSSIBLE LINK-UP TO THE PACIFIC OCEAN SYSTEM

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Feasibility study

Location:

Cost: $0.30 million

External financing required: $0.30 million

Duration: Six months

Desirable starting date: 1984

Project initiator: Pan-African Telecommunications Union (PATU)

Project management authority:

Observations: It is proposed to link Ethiopia, Djibouti, Somalia, Kenya, the United Republic of Tanzania, Mozambique and the islands of the Indian Ocean by submarine cable and then to connect them to the Pacific Ocean system. The project submitted consists of the preparation of a feasibility study for this link.

Project No. TEP-60-017

A STUDY ON THE POSSIBILITIES FOR INDUSTRIALIZATION IN THE FIELD OF TELECOMMUNICATIONS EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Study on the possibilities for industrialization in the field of telecommunications equipment

Location: Central African subregion

Cost: $0.10 million

External financing required: $0.10 million

Duration:

Desirable starting date: 1984

Project initiator: African Posts and Telecommunications Union (UAPT)

Project management authority:

II. Description

1. Aim and objective

The purpose of the project is the establishment of a factory for the manufacture of telecommunications equipment.

2. Nature and constituent parts

The project comprises a feasibility study.

III. Justification: economic analysis

1. Context and benefits

Expenses by governments on purchases and equipment are constantly increasing. The setting up of a manufacturing unit will help reduce both the costs incurred in the importation of this equipment and the dependency of the governments concerned on foreign suppliers.

2. Cost

The estimated cost of study is $0.10 million.

Project No. TEP-60-018

ESTABLISHMENT OF A LABORATORY FOR THE REPAIR AND CALIBRATION OF MEASURING EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Study and establishment of a laboratory for the repair and calibration of measuring equipment

Location: Togo

Cost: $1.50 million

External financing required: $1.50 million

Duration:

Desirable starting date: 1984

Project initiator: African Posts and Telecommunications Union (UAPT)

Project management authority:

II. Description

1. Aim and objective

The purpose of the project is the establishment of a laboratory equipped with qualified personnel to undertake repairs and calibration.

2. Nature and constituent parts

The project to be undertaken comes under the general maintenance system and comprises the study and establishment of a laboratory.

III. Justification: economic analysis

1. Context and benefits

The laboratory will make it possible to conveniently repair, build and adjust measuring equipment.

2. Cost

The estimated cost of the project is $1.50 million.

Project No. TEP-60-019

SURVEY OF COMOROS-MADAGASCAR-UNITED REPUBLIC OF TANZANIA LINK

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Pre-investment survey for the establishment of a telecommunication direct link between the United Republic of Tanzania, the Comoros and Madagascar

Location: Moroni, Antananarivo and Dar-es-Salaam

Cost: $0.04 million

External financing required: $0.04 million

Duration: Four month

Desirable starting date: 1984

Project initiator: The Governments

Project management authority: The posts and telecommunications authorities

II. Description

1. Aim and objective

The project aims to strengthen co-operation between the Indian Ocean island countries and the East African countries.

2. Nature and constituent parts

The main constituent part of the project is assistance to the Governments of the Comoros, Madagascar and the United Republic of Tanzania in undertaking detailed survey with a view to establishing direct links between the Comoros and the United Republic of Tanzania and between Madagascar and the United Republic of Tanzania.

III. Justification: economic analysis

1. Context and benefits

Presently, only one direct HF link exists between Madagascar and Kenya in East Africa.

The weakness of communications between the two island countries and the continent interferes with economic and social co-operation.

With the establishment of reliable telecommunication links, trade between the three countries will be stimulated. This will encourage and promote co-operation in various sectors. The proposed survey has to be conducted to ensure that the link to be established will both meet the demand for telecommunication services as well as be technically, financially and economically viable.

2. Cost

The cost of the survey is $0.04 million.

Project No. TEP-60-020

BURUNDI-RWANDA-UNITED REPUBLIC OF TANZANIA-UGANDA PANAFTEL LINK

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Subregional PANAFTEL network

Location: Within the four countries

Cost: $9.00 million

External financing required: $9.00 million

Duration: Four years

Desirable starting date: 1983

Project initiator: The Governments

Project management authority: The posts and telecommunications authorities

II. Description

1. Aim and objective

The network is part of the PANAFTEL project

2. Nature and constituent parts

The routes for this microwave network are:
- Bujumbura - Kigali - Kabale (Uganda);
- Songo (Burundi) - Kigoma (United Republic of Tanzania);
- Kigali - Ngara (United Republic of Tanzania);
- Masaka (Uganda) - Bukoba (United Republic of Tanzania);

The systems capacity is 960 channels including TV.

III. Justification: economic analysis

1. Context and benefits

The number of economic activities going on between the four countries, i.e., agriculture, industries as well as trade and commerce, justify developing efficient telecommunication links of the proposed capacities in order to cope with the volume of business likely to be conducted between them.

In addition they co-operate in the project to explore and develop the water and mineral resources of the Kagera river.

All these activities cannot be meaningfully promoted without an efficient telecommunication system.

The network has already been surveyed within the PANAFTEL project.

2. Cost

The total cost is $9 million. Application for external financing has been sent to EEC.

Project No. TEP-60-021

MALAWI-UNITED REPUBLIC OF TANZANIA: MICROWAVE LINK

I. Identification and summary

Origin of the project: Submitted by the Governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Supply and installation of equipment

Location: Mbeya (United Republic of Tanzania) - Mzuzu (Malawi)

Cost: $4.50 million

External financing required: $4.50 million

Duration: Three years

Desirable starting date: 1984

Project initiator: The Governments

Project management authority: The posts and telecommunications authorities

II. Description

1. Aim and objective

The route is part of the PANAFTEL project.

2. Nature and constituent parts

The project which is part of the PANAFTEL system runs from Kaluwe Hill (Mbeya) to Karonga (Malawi), a distance of 140 km. A 960-channel microwave which would also be capable of carrying one PAL colour TV bearer circuit is planned to be installed along this route. Survey has already been done.

III. Justification: economic analysis

1. Context and benefits

Establishment of an efficient telecommunication system between Malawi and the United Republic of Tanzania will help to promote trade and good neighbourliness between the two countries.

In addition Malawi and the United Republic of Tanzania are members of the Southern Africa Development Co-ordination Conference (SADCC) which aims to promote economic co-operation among the member countries.

All these activities require efficient telecommunication system.

2. Cost

The total cost is $4.50 million. Application for external financing has been sent to EEC.

IV. Status

Link-up project presently under consideration. See also under project, TEP-43-003.

Project No. TEP-60-022

ADMINISTRATIVE AND TECHNICAL CONFERENCE ON TELECOMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the government

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Conference

Location: To be determined

Cost: $0.85 million

External financing required:

Duration: 15 days

Desirable starting date: 1984

Project initiator: PATU

Project management authority:

Project No. TEP-60-023

UAPT: DATA BANK

I. Identification and summary

Origin of the project: Submitted by the African Posts and Telecommunications Union (UAPT)

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: UAPT information centre

Location: Brazzaville (Congo)

Cost: $0.50 million

External financing required: $0.50 million

Duration:

Desirable starting date:

Project initiator: The African Posts and Telecommunications Union (UAPT)

Project management authority:

II. Description

1. Aim and objective

Establishment of a data bank on:

- Equipment and suppliers;
- Local engineers;
- Library;
- The purchase of a micro-computer is envisaged in view of its considerable usefulness in the control of data banks

2. Nature and constituent parts

The project comprises:

- Equipment;
- Infrastructure (buildings).

III. Justification: economic analysis

1. Context and benefits

The project will make it possible to stock at the regional level, statistical data on the volume of telecommunications traffic, installation of equipment, etc., for all member countries of the Union.

2. Cost

The cost of the project is estimated at $0.50 million.

Project No. TEP-60-024

SEMINAR ON TELE TRAFFIC

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Seminar

Location: To be determined

Cost: $0.17 million

External financing required: $0.17 million

Duration: 10 days

Desirable starting date: 1984

Project initiator: PATU

Project management authority:

Project No. TEP-60-026

CREATION OF A SUBREGIONAL PILOT CENTRE FOR MAINTENANCE

I. Identification and summary

Origin of the project: Submitted by Governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Feasibility study

Location: To be determined

Cost: $0.15 million

External financing required: $0.15 million

Duration: six months

Desirable starting date: 1984

Project initiator: PATU

Project management authority:

Project No. TEP-60-027

SEMINAR ON CHOICE OF CRITERIA FOR TELECOMMUNICATIONS EQUIPMENT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Regional project

Nature: Regional seminar

Location:

Cost: $0.17 million

External financing required: $0.17 million

Duration: 10 days

Desirable starting date: 1984

Project initiator: PATU

Project management authority:

Project No. TEP-60-028

RWANDA/UGANDA: ESTABLISHMENT OF KIGALI-KAMPALA INTERNATIONAL LINK

I. Identification and summary

Origin of the project: Submitted by the Governments of Rwanda and Uganda

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Implementation study and installation of new microwave link, Byumba-Mbarara section

Location: Rwanda-Uganda

Cost: $0.82 million

External financing required: $0.82 million

Duration: One year

Desirable starting date: 1983

Project initiator: Ministries of Posts and Telecommunications

Project management authority: Minitries of Posts and Telecommunications

II. Description

1. Aim and objective

Replacement in Uganda of the destroyed telecommunication installations by 960-channel microwave. The stand-by channels to be used for TV. Initial capacity: 48 channels.

2. Nature and constituent parts

The project involves an implementation study and the installation of a new microwave link between Byumba and Mbarara.

III. Justification; economic analysis

1. Context and benefits

To establish a SHF link between Rwanda and Uganda as part of the PANAFTEL network, so as to implement the flow of the traffic between, on the one hand, Rwanda and Burundi and on the other between Uganda and East Africa. The former link was cut off in Uganda during the war. The implementation of a new communications trunk route is greatly needed and justified on both economic and social development grounds. The stand-by channel will also facilitate direct TV transmission between the two countries.

2. Cost

Rwanda's share of the project cost is estimated at $0.50 million. The cost of both sides is to be met by the World Bank. The feasibility study cost of $0.12 million will be shared between Rwanda and Uganda.

Project No. TEP-60-029

SUBREGIONAL CO-ORDINATING MEETINGS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Telecommunications

Order of priority: Subregional project

Nature: Subregional meetings on PANAFTEL

Location: Subregions:

Cost: $0.80 million

External financing required: $0.80 million

Duration: Three years

Desirable starting date: 1984

Project initiator: PATU

Project management authority:

Project No. MAP-60-001

FOLLOW-UP OF MANPOWER AND TRAINING NEEDS SURVEYS FOR 31 COUNTRIES

I. Identification and summary

Origin of the project: Submitted by the Governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Surveys on manpower and training needs

Location: All African countries

Cost: $0.35 million

External financing required: $0.35 million

Duration: One year

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from phase I.

Project No. MAP-60-002

ESTABLISHMENT OF A REGIONAL AND MULTINATIONAL TRAINING CENTRE FOR MEDIUM-LEVEL MANPOWER FOR THE CENTRAL AFRICAN COUNTRIES

I. Identification and summary

Origin of the project: Submitted by the Governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Construction and equipment of a regional training centre

Location: To be decided

Cost: $8.24 million

External financing required: $8.24 million

Duration:

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I.

Project No. MAP-60-003

INTRODUCTION OF MANAGEMENT COURSES WITH SPECIAL RELEVANCE TO TELECOMMUNICATION FIELDS FOR TOP AND MIDDLE MANAGEMENT PERSONNEL AT EXISTING INSTITUTIONS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Organization of seminars for senior and middle-level personnel

Location: African specialized institutions

Cost: $3.74 million

External financing required: $3.74 million

Duration: Three years

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The objective of the project is to enable countries to become self-sufficient in senior and middle-level staff through adequate training with a view to improving the efficiency and productivity of telecommunications.

2. Nature and constituent parts

The project consists of organizing courses for middle-level and senior personnel in existing multinational institutions.

III. Justification: economic analysis

1. Context and benefits

National training requirements for middle-level and senior personnel are rather small and therefore costly to meet. The countries concerned should therefore send, or continue to send, their personnel to courses to be organized in existing international institutions.

2. Cost

	In million $
Organization of courses for senior personnel	0.50
Organization of courses for middle-level personnel	1.65
Organization of seminars	1.59
Total	3.74

Project No. MAP-60-004

SEMINARS, SPECIAL COURSES AND WORKSHOPS IN FIELDS OF COMMON-CARRIER COMMUNICATION, SOUND BROADCASTING AND TELEVISION

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Organization of seminars, courses and workshops in fields of common-carrier communication, sound broadcasting and television

Location: To be decided

Cost: $1.42 million

External financing required: $1.42 million

Duration: Three years

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The objective of the project is to enable countries to become self-sufficient in communications staff.

2. Nature and constituent parts

The project is based on the organization of:

- Three special courses,
- Three seminars, and
- Two working groups.

to which two participants from each country will be invited for each session.

III. Justification: economic analysis

1. Context and benefits

A number of telecommunication or broadcasting bodies have neither the equipment nor the personnel capable of training their staff. It is even impossible for on-the-job-training to be undertaken properly since there are no specialists available for the purpose. The only means of assisting these countries is by organizing special short-term courses, seminars and workshops.

2. Cost

The estimated cost for eight seminars and workshops is $1.42 million.

Project No. MAP-60-005

ESTABLISHMENT OF MULTINATIONAL INSTITUTIONS FOR TRAINING HIGH-LEVEL STAFF AND INSTRUCTORS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Construction and equipment of institutions and the provision of technical assistance for training

Location: To be decided

Cost: $8.97 million

External financing required: $8.97 million

Duration: Two years

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The objective of the project is to improve the training of senior staff and technical instructors.

2. Nature and constituent parts

The project consists of the construction of three senior training institutions each comprising:

- Construction of buildings, including classrooms, meeting rooms and boarding and living accommodation for students;
- Teaching equipment;
- Technical assistance for training

III. Justification: economic analysis

1. Context and benefits

There is a great need in Africa for training senior staff and technical instructors familiar with modern training methods. The project submitted is aimed at solving this problem on a regional level.

2. Cost

	In million $
Estimate for an institution for 150 students, comprising:	
- construction	2.00
- equipment	0.20
- technical assistance for training	0.70
- fellowships	0.09
Cost per institution	2.99
Total cost of the project (3 institutions)	8.97

Project No. MAP-60-006

DEVELOPMENT OF A REGIONAL TELECOMMUNICATIONS MANPOWER INVENTORY/DIRECTOR

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Development of a regional telecommunications manpower inventory/directory

Location:

Cost: $0.05 million

External financing required: $0.05 million

Duration:

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The objective of the project is to facilitate an exchange of personnel by publishing information on available African experts.

2. Nature and constituent parts

The project consists of preparing a directory of African personnel specialized in advanced telecommunication techniques. It calls for the appointment of a full-time official for the registration and maintenance of information and for co-ordinating the preparation of the directory with the assistance of an administrative officer.

III. Justification: economic analysis

1. Context and benefits

A solution to the lack of senior staff in many countries can no doubt be provided by an exchange of personnel whenever this is possible. This could be facilitated by the existence of a registry of available specialists.

2. Cost

	In million $
Estimate for:	
- Personnel	0.03
- Equipment	0.01
- Miscellaneous expenses	0.01
Total	0.05

Project No. MAP-60-007

ESTABLISHMENT OF A MULTINATIONAL TRAINING CENTRE FOR MEDIUM-LEVEL MANPOWER FOR THE LUSOPHONE COUNTRIES

I. Identification and summary

Origin of the project: Submitted by the Governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Construction, equipment and assistance for starting the training centre

Location: To be decided

Cost: $2.25 million

External financing required: $2.25 million

Duration: Five years

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I

II. Description

1. Aim and objective

The aim of the project is to develop means of training for the Lusophone countries by offering courses capable of meeting basic manpower needs.

2. Nature and constituent parts

The project comprises:

- Construction of a building to house classromms, workshops and attendant services (restaurants, living accommodation, etc.);
- Purchase of the necessary teaching material;
- Expert technical assistance for the first phase;
- Provision of specialist fellowships.

III. Justification: economic analysis

1. Context and benefits

Basic training is available in the Lusophone countries, but there is an urgent need to train middle-level personnel. The establishment of a multinational institution should be more economically profitable than a series of separate centres in indidivual countries.

2. Cost

Estimate for:	In million $
- Construction	0.498
- Equipment	0.410
- Technical assistance	0.990
- Fellowships	0.048
- Recurrent expenditure	0.307
Total	2.253

Project No. MAP-60-008

OPERATIONS AND MAINTENANCE OF INSTALLATIONS: WORKSHOPS AND SEMINARS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional/subregional project

Nature: Organization of workshops and seminars

Location: Region/subregion

Cost: $1 million

External financing required: $1 million

Duration: Ten months

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I.

The project submitted provides for 10 workshops or seminars each comprising 10 to 15 persons.

The estimate amounts to 10 x 0.10 - $1 million.

Project No. MAP-60-009

RURAL TELECOMMUNICATIONS: WORKSHOPS AND SEMINARS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower and training: telecommunications

Order of priority: Regional project

Nature: Organization of workshops and seminars

Location: Region and subregion

Cost: $0.40 million

External financing required: $0.40 million

Duration: Four months

Desirable starting date: 1980

Project initiator: ITU/ECA/PATU

Project management authority:

Observations: Project transferred from Phase I.

The project submitted provides for four seminars or workshops for groups of 10 persons selected from among rural telecommunications officials: 4 x 0.10 - $0.40 million.

Project No. MAP-60-010

ESTABLISHMENT AND STRENGTHENING OF MORE MEDIUM-LEVEL TRAINING CENTRES: EASTERN AND SOUTHERN SUBREGION, WEST SUBREGION, CENTRAL SUBREGION AND NORTH SUBREGION

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional/subregional project

Nature: Establishment and strengthening of more medium-level training centres

Location: Regions and subregions

Cost: $35 million

External financing required: $35 million

Duration: Five years

Desirable starting date: 1980

Project initiator: ECA/ITU

Project management authority:

Observations: Project transferred from Phase I

The estimate for the project, per subregion, is:

	In million $
East and Southern African subregion	10.00
West African subregion	13.00
Central African subregion	8.00
North African subregion	4.00
Total	35.00

Project No. MAP-60-011

ESTABLISHMENT OF MORE HIGH-LEVEL TRAINING INSTITUTES: EASTERN AND SOUTHERN SUBREGION, WEST SUBREGION, CENTRAL SUBREGION AND NORTH SUBREGION

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional/subregional project

Nature: Establishment of high-level training institutes

Location: Subregions

Cost: $26.31 million

External financing required: $26.31 million

Duration: Five years

Desirable starting date: 1984

Project initiator: ECA/ITU

Project management authority:

Observations: Project transferred from Phase I.

With a view to improving the training and retraining of senior staff and technical instructors, it is necessary to establish more training institutes.

Project No. MAP-60-012

ESTABLISHMENT OF TRAINING CENTRES FOR BASIC-LEVEL TECHNICIANS IN TELECOMMUNICATIONS FOR COUNTRIES WITHOUT THESE FACILITIES

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: National projects for disadvantaged countries

Nature: Construction, equipment and training

Location: Benin, Burundi, Cape Verde, Comoros, Djibouti, Equatorial Guinea, Guinea-Bissau, Namibia, Rwanda, Sao Tomé and Principe, Seychelles and Togo

Cost: $10.07 million

External financing required: $10.07 million

Duration: Three years

Desirable starting date:

Project initiator: ITU

Project management authority:

Observations: Project transferred from Phase I.

The 12 countries mentioned above have no means of training their basic-level technical personnel. The centres envisaged should remedy this situation.

The estimate submitted comprises, for each centre:

- Construction of buildings: a block of three classrooms and workshops and administrative and personnel offices;
- Teaching material for basic courses;
- Experts for 50 man-hours;
- Fellowships for the training of counterparts at a cost of $C.51 million per centre and $6.12 million for the project.

Provision must also be made for recurring annual expenditure for each centre for:

	In million $
Salaries	0.07
Miscellaneous expenditure (rent, office furniture, etc.)	0.01
Total	0.08

Project No. MAP-60-013

FURTHER DEVELOPMENT OF NATIONAL BASIC AND MEDIUM-LEVEL TRAINING CENTRES IN THE EASTERN AND SOUTHERN AFRICAN SUBREGIONS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: National projects

Nature: Further construction and development of training. Study to be undertaken

Location: Eastern and Southern African subregions

Cost: $10 million

External financing required: $10 million

Duration:

Desirable startind date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I.

The project consists of identifying the countries which will benefit from an extension of existing national centres.

The estimate submitted comprises:

	In million $
Detailed study on existing centres	1.00
Average cost per training centre to accommodate 15 to 20 students	9.00
Total	10.00

Project No. MAP-60-014

ESTABLISHMENT OF NATIONAL MEDIUM-LEVEL TRAINING CENTRES IN 26 COUNTRIES WHERE THERE ARE NONE AT PRESENT

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: National projects for disadvantaged countries

Nature: Study, construction, equipment and technical assistance required for the establishment of national training centres

Location: To be decided

Cost: $15.75 million

External financing required: $15.75 million

Duration:

Desirable starting date: 1984

Project initiator:

Project management authority:

Observations: Project transferred from Phase I.

With a view to meeting the basic requirements of 26 countries in middle-level personnel, it is essential to establish training centres.

The estimate submitted comprises:

	In million $
Detailed study of the centres to be established in each country	1.00
Average cost per centre capable of accommodating 15 to 20 students	14.75
Total	15.75

Project No. MAP-60-015

ESTABLISHMENT OF A REGIONAL SCHOOL FOR SATELLITE COMMUNICATIONS

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Studies, provision of assistance and equipment

Location: Kampala (Uganda)

Cost: $2.50 million

External financing required: $2.50 million

Duration: Four years

Desirable starting date: 1984

Project initiator: Pan-African Telecommunications Union (PATU)

Project management authority:

E/ECA/TCD/17/Add.1
Part I/M60-016
Part 423

Project No. MAP-60-016

ESTABLISHMENT OF A STAFF EXCHANGE PROGRAMME

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Regional project

Nature: Establishment of a staff exchange programme

Location:

Cost:

External financing required:

Duration:

Desirable starting date:

Project initiator: Pan-African Telecommunications Union (PATU)

Project management authority:

Project No. MAP-60-017

IMPROVEMENT OF THE MANO RIVER UNION P AND T TRAINING INSTITUTE

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Manpower training: telecommunications

Order of priority: Subregional project

Mature: Construction of a campus and equipment for the Mano River Union Posts and Telecommunications Training Institute now functioning in rented buildings

Location: Freetown, Sierra Leone

Cost: $6.06 million

External financing required: $1.96 million

Duration: Three years

Desirable starting date: 1984

Project initiator: Mano River Union

Project management authority: Mano River Union

II. Description

1. Aim and objective

The aims of the project are:

- To meet the growing needs of member countries (i.e. Sierra Leone, Liberia and Guinea) for training manpower in the areas of Telecommunications, Postal Services, Broadcasting and Industrial Communications.

- Toundertake a study on manpower/training needs of member countries in the communications sector and plan future training activity accordingly.

- To train instructors to bring them up-to-date with modern developments so that training quality will keep pace with developmental needs.

2. Nature and constituent parts

The project comprises:

- Construction of a fully equipped residential campus for the institute at Godeich, Freetown, Sierra Leone;

- Provision of the full range of modern equipment for practical training;

- Provision of a mobile post office unit for training purposes;

- Fellowships abroad for the faculty to keep abreast of the latest developments in communications technology.

III. Justification; economic analysis

1. Context and benefits

Since its inception in 1979, the Institute is located in temporary premises, scattered over Freetown. It has been able to conduct courses for technicians and middle level personnel of member countries in telecommunications and a number of courses on various aspects of postal services, thanks to a grant of $1.50 million from the EEC for equipment, fellowships and expert assistance. Space limits the number of trainees in each course and also the full utilization of equipment. To meet the growing needs for skilled and trained manpower in the region, a fully equipped residential campus is essential. The project aims at the construction of such a campus at Goderich in Freetown, Sierra Leone in three phases.

2. Cost

The estimated cost of the project is $6.06 million, broken down as follows:

	In million $
Physical	3.50
Equipment	0.85
Fellowships and personnel	0.33
Sub-total	4.68
Contingencies-physical 10%	0.40
Price escalations 20%	0.70
Total	6.06

The EEC has generously agreed to contribute $2.50 million for the project. The three member countries are contributing $1.60 million, leaving a net shortfall of $1.96 million, for which external assistance is sought.

Project No. SAP-60-001

FEASIBILITY STUDY ON THE REGIONAL AFRICAN SATELLITE COMMUNICATIONS SYSTEM

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Communications by satellite

Order of priority: Regional project

Nature: Study

Location: To be decided

Cost: $3.50 million

External financing required: $3.50 million

Duration:

Desirable starting date:

Project initiator: ECA/OAU/ITU/UNESCO/**URTNA/URATE**/UAPT

Project management authority:

Observations: Project transferred from Phase I.

A prefeasibility study was completed in 1982. This study has established the need for detailed feasibility studies:

(a) To define telecommunication and broadcasting (including television) services requirements particularly for the benefit of rural and isolated areas of each participating country up to the year 2000;

(b) To find out the interest of African States to realize and eventually to utilize the proposed system;

(c) To prove the basic technical and economic feasibility of the overall technical concept to be proposed;

(d) To prepare a comprehensive study that gives the basic technical and economic viability of a dedicated communication satellite that will cover the African continent and provide efficient and economic telecommunication facilities (including broadcasting) to rural and remote areas, as well as providing service to certain interurban and intra-African routes;

(e) To investigate the quantities, size of units and environmental conditions of Africa so as to prepare guidelines and specifications for the initiation of research and manufacture of appropriate equipment for the ground segment of the system that may be proposed.

The feasibility studies are intended to be undertaken within the framework of the arrangements stipulated in ECA Conference of Ministers resolution 436 (XVII) on appropriate telecommunication technologies for the development of Africa. Some aspects of this project are to be co-ordinated with project TEP-60-003.

The cost of the feasibility study is currently estimated at $3.50 million but this is subject to review.

Project No. SAP-60-002

JOINT SEMINARS AND COURSES ON COMMUNICATIONS BY SATELLITE

I. Identification and summary

Origin of the project: Submitted by the governments

Sub-sector: Communications by satellite

Order of priority: Regional project

Nature: Organization of seminars and courses

Location: To be decided

Cost: $0.20 million

External financing required: $0.20 million

Duration:

Desirable starting date: 1980

Project initiator: ECA/ITU/ICAO/IMO/UNESCO

Project management authority:

Observations: Project transferred from Phase I.

With a view to satisfying the requirements of ECA Conference of Ministers resolution 310 (XIII) concerning the possibility of creating a regional satellite system for Africa, seminars and working groups will be organized to prepare African experts for the responsibility of evaluating the results of the feasibility study. In addition, seminars will be organized to provide the African telecommunication and broadcasting organizations with the most recent information about developments in such technology.

Litho in United Nations, Addis Ababa (UNECA) 085-412 Nov. 1985 2450